THE

Mariner's Jewel:

OR, A

Pocket Companion for the Ingenious.

CONTAINING

Decimal Arithmetick; Extraction of the Square Root; To know the Burthen, and how to Rig a Ship; With an Eaſie and Exact Method for all Gunners, Carpenters, and Boatſwanes, whereby to know the Expence of their Stores every Month, and what they have Remaining; With Proper Directions for making of Maſts and Yards according to Proportion; With a new Liſt of the Royal Navy; A General Pay-Table for all Degrees of Men; An Abſtract of Parliament for the Encouragement of Seamen, with Her Majeſty's Approbation hereto; A Guide for Purſers and Stewards; The moſt uſual Terms at Sea explain'd, with Directions how to Work a Ship at Sea; And a Compendium of Sea Gunnery; With ſeveral other things needful to be underſtood by all ſorts of Sea-faring Men.

By *JAMES LOVE*, Mathematician.

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BRITISH MUSEUM

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CHAP. I.

Of Decimal Arithmetick.

Notation of Decimals.

A *Decimal* is that by which is diſtinguiſhed the parts of a Unit: And is decreaſed from Unity to ſo many Tenth Parts of a Unit. For Unity is divided into 10 Parts, and every 10th Part is called a Prime, every Hundred Part is a Second, and every Thouſand Part a Third, *&c.* So as whole Numbers increaſe by Tenths from the Units place towards the Left-hand, ſo Decimals decreaſe by Tens from the Units place towards the Right-hand, as may appear by the following E*xample*.

6 Sixths, or 1000000 pts.
5 Fifths, or 100 thouſ. pts.
4 Fourths, or 10 thouſ. pts.
3 Thirds, or thouſ. parts.
2 Seconds, or hundr. parts.
.1 Primes, or tenth parts.
1 Unity, or an Integer.

For 10 Primes is one Unit, and 10 Seconds is one Prime, and 10 Thirds is one Second, and 10 Fourths is one Third, *&c.* So that every place towards the Left, is 10 Times leſs than the preceeding Figure: For preponing of Cyphers, leſſen the following Figure in a Tenfold manner; for (2.) is two Primes, or two tenths of an Integer or Unit; but (.02) is but two Seconds, or two Hundredth Parts of an Unit. Cyphers after a Decimal neither augment nor deminiſh the value of the Decimal.

A Decimal is always diſtinguiſhed from a whole Number by a Prick or Period, as in Numbers following.

15.3 365.3 .262 .15 1625.32 273.2

The *Numerators* are only ſet down, the *Denominators* being known by the Number of Places in the *Numerator*; for if the *Numerator* conſiſt but of One Place, as .1, it is $\frac{2}{10}$; if of Two, as .22, it is $\frac{22}{110}$; if of Three, as .235, it is $\frac{235}{1000}$, *&c.*

I ſhall inſiſt no more upon *Notation of Decimals*, the foregoing being ſufficient; but ſhall proceed to *Addition.*

Ad-

Addition of Decimals.

Addition is the adding of Summs together, and making one intire Summ of two, or more: You muſt take particular care in placing whole Number under whole Number, and Decimal under Decimal, and Units under Units, and Tens under Tens.

Suppoſe 325.7 were to be added to 463.72, I place them one under another, in manner following:

To ——— 463.72
Add ——— 325.7
———————
Summ —— 782.42

Obſerve always to prick off as many Decimals in the Total, as there is in the biggeſt Decimal given to be added.

Example.

To ——— 365.23
Add } —— 23.20
2.03
———————
Summ —— 390.46

An Example of Addition, *as to Timber, or Board Meaſure.*

Note, That all intire Quantities, as Feet, Yards, Ells, Ounces, Pounds, and Hundred Weights, are divided into a Hundred Parts, therefore the one fourth of any one of theſe is .25, the half is .50, and the three fourths is .75.

There is three Boards of theſe following Dimenſions; what is the Summ of Feet and Parts?

	Feet. Parts.
The firſt Board——	246.25
The ſecond————	43.50
The third————	16.26
The Summ———	306.01

The Total Summ is 306 Foot, and one hundredth part of a Foot.

Addition of Money.

A Pound Sterling is likewiſe divided into 100 Parts. So .05 is the Decimal for one Shilling, and .10 for two Shillings, and .15 for three Shillings, *&c.*

Suppoſe I were to add 3 Shillings and 4 Pence to 2 Shillings and 3 Pence.

The Decimal for 3 Shill. is .15
The Decimal for 2 Shill. is .10
The Decimal for 4 Pence is .0166667
The Decimal for 3 Pence is .0125

Summ .2791667

It is very hard for the Learner to know the value of this Total, being he is not come the length of Multiplication, which is the only Rule uſeful in this caſe. The general Rule is, every Prime or Unit in the Total Summ is 2 *s.* value and every 5 Seconds is 1 *s.* and the ſuperplus of the Seconds above 5 is ſo many Ten Farthings, and the number of Digits in the Thirds place is ſo many Farthings: All the reſt of the Decimals to the Right being of no value. The .2 Primes in the Total is 4 *s.* and the 5 Seconds of the 7 is 1 *s.* and the two remaining is 20 Farthings; the 9 Thirds added thereto makes 29 Farthings, which is 7 *d.* Farthing; but by reaſon the number is above 25, the Farthing muſt be cut off. The Sum is 5 *s.* 7 *d.*

So much for *Addition of Decimals.*

Sub-

Subſtraction of Decimals.

Subſtraction is the taking a ſmall Summ from or out of a greater, as if you would take 7 *l.* 5 *s.* 6 *d.* out of 10 *l.* 5 *s.* 6 *d.* the remainder muſt be 3 *l.* or if from 265.2, you will take 153.1, *&c.*

Example.

From 105.25 Foot of Superficial Meaſure, Subſtract 97.25.

105.25		1035.2
97.25	or from	973.5
8.00		61.7

From	.876	From	725.2
Take	.324	Take	322.6
Remains	.552	Remains	402.6

Multiplication of Decimals.

In *Multiplication of Decimals* the Method is the ſame as in whole Numbers; only you are to prick off ſo many Decimals towards the Right-hand in the Product, as there is Decimals in both *Multiplicator* and *Multiplicand:* As ſuppoſe I were to multiply 26.75 by 35, there muſt be two Decimals prickt off in the Product, by reaſon there is two in the *Multiplicand.*

Example 1.

Of Mixt Numbers.

Multiplicand———26.75
Multiplicator——— .35

13375
8025

Product———936.25

Example 2.

246.32
24.61

24632
147792
98528
49264

5061.9352

Example 3.

32.6
.2

6.52

Example 4.

6.32753
32.64

2531012
3796518
1265506
1898259

206.5305792

Here you ſee in the fourth *Example* there is in the Multiplicator and Multiplicand 7 Decimals; therefore I prick off as many in the Product as there is in both.

Note, That as Whole Numbers multiply'd by whole Numbers, increaſe their value, ſo Decimals multiply'd by Decimals decreaſe their value, by reaſon the Product is removed farther from Unity than either of the Decimals given to be multiply'd, as ſhall appear by the following *Example*.

.03	.75	.32
.2	.04	.4
.006	.0300	.128

It will ſometimes fall out that there are not ſo many Figures in the Product as there are Decimals in the Multiplicand and Multiplicator; in ſuch caſes you muſt place Cyphers before the Figures till they be equal: As you ſhall ſee in the following Work.

Example.

	.004	.42	6.5	.22
	.002	.07	.0002	.4
Prod.	.000008.	.0294	.00130	.088

Diviſion of Decimals.

We ſhall in the next place proceed to *Diviſion of Decimals*, which is the moſt difficult of all the reſt; all the difficulty being to find the true value of the *Quotient*.

The general Rule is, When you have finiſhed your Diviſion, to prick off ſo many Figures to the Right hand, in the *Quotient*, as will make the *Decimals* in the *Diviſor* equal in number to thoſe in the *Dividend*; and the Figures to the Left are whole Numbers.

Ex-

Example 1.

Let 64.326 be divided by 32.4

32.4) 64.326 (19
31.92
2.766
174

You ſee in the foregoing Work that there is three Decimals in the Dividend, and one in the Diviſor; therefore I make that 1 in the Diviſor, and 2 in the Quotient, equal to the 3 in the Dividend.

Example 2.

.325) 53.62321 (161.19
20.12
923
2982
571
246

Example 3.

Let 28. be divided by 32.6

In this Example the Diviſor 32.6 is

greater than 28, the Dividend; in this, and all other ſuch Caſes, you muſt place a competent number of Cyphers behind the Dividend; and if it be a whole Number you are to divide; you muſt prick off the Cyphers from the whole Numbers, and then proceed in your Diviſion, as you were to divide whole Numbers.

32.6) 28.00000 (.8585
1920
2900
1920
290

Example. 4.

To divide a Decimal Fraction by a Decimal Fraction.

Let .900 be divided by .05

.35) .900 (18.0
40
00

Let .9000 be divided by .0005

.0005) .9000 (1800
40
000

Would not one think it very ſtrange a Decimal Fraction, divided by a Decimal Fraction, ſhould bring forth a whole Number in the Quotient! But I ſhall make it very plain that it muſt be ſo, and no otherways, by reaſonable Demonſtration.

By the firſt Example you ſee I divide .900 by .95, and the Quotient I find to be 18.0, that is, becauſe there is three Decimals in the Dividend, and one in the Diviſor, I make up the number of thoſe in the Dividend by taking one Decimal from the Quotient, and adding to the 2 in the Diviſor.

Now the nature of the Queſtion is thus: I deſire to know how many times 5 Seconds in 9 Primes? The Anſwer is 18. For there is 18 times 5 Seconds in 9 Primes.

If it fall out at any time that there is not ſo many Figures in the Quotient as will make theſe in the Diviſor equal in Number to thoſe in the Dividend, then you muſt prefix Cyphers before the Quotient to the Left-hand, as in the following Example.

4) .13779 (.03444

I ſhall give you an Example as to the Uſe and Application of Diviſion of Decimal Fractions, to the end that thoſe who intend to uſe Decimals may the better underſtand what they are going about.

Suppoſe I were to divide 10 Shillings among 20 Men, the Decimal for 10 Shillings is .50; therefore I divide my Decimal .50 by the number of Men 20, and the Quotient will be .025, which is the Decimal equal to 6 Pence; for if you multiply .025 by, 12 and double the Product it will be 6 Pence.

I could give ſeveral Examples of this kind, but the various Examples that will happen in the following Work, will, in its proper place, give a clearer Demonſtration than can be here expected; ſo I ſhall refer the Learner to the Practice in general, and proceed to my intended Work.

The Extraction of the Square Root.

Firſt, A Square Number is any Digit, or any other Number; which being multiplied by (or into) it ſelf, produceth a Square Number, as 9 being multiplied into it ſelf, by ſaying, 9 times 9, produceth the Square Number 81; the Root of which is 9.

Secondly, Square Numbers are either Single or Compound.

Thirdly, A ſingle Square Number is that, which being produced by the Multiplication of one ſingle Figure by it ſelf, and is always leſs than 100; ſo 36 is a ſingle Square Number, produced by 6; likewiſe 7 multiplied by it ſelf, produceth the Square Number 49.

Fourthly, All the ſingle Square Numbers, together with their reſpective Roots, are ſet down in the following *TABLE*.

Roots	1	2	3	4	5	6	7	8	9
Square	1	4	9	16	25	36	49	64	81

Fifthly, When the Root of any Spuare Number is required, it being leſſer than 100, and yet is not exactly a ſingle Square expreſſed in the *Table* above, then you are to take the Root of that ſingle Square Number, expreſſed in the ſaid *Table*, which (being leſs) is neareſt to the given Square; as if it were required to find the Root of 60, it would be found to be 7; and 11 being given, the Root that belongs to it is 3.

Sixthly, A Compound Square Number is that, which being produc'd by a Number (that conſiſts of more Places than one) multiplied by it ſelf, is never leſs than 230: So 727 is a Compound Square Number produc'd by the Multiplication of 27, multiplied by it ſelf.

Seventhly, The Root of any Number, under 100, may be eaſily diſcover'd by the *Table* of ſingle Squares: But to extract the Root of a Compound Square Number, conſiſting of Integers, obſerve theſe following Precepts.

Firſt, Point the given Number, *viz.* place a Point over the firſt Figure, towards the Right-hand, omitting every other Figure, place one over the 3d, 5th, and ſo on, according to the Number of Places.

The Figures thus diſtinguiſh'd are call'd Points, (or Squares) and as many Points as are in the Number given for Extraction, of ſo many Places (or Figures) conſiſts the Root, if the Number be an exact Compound Square.

Secondly, When you have thus prepar'd your Number, then draw a crooked Line on the Right-hand of your Number; behind which you are to place the Root, as you do for a Quotient in *Diviſion*.

Thirdly, When your Number is prepar'd, find out the Square Root of the firſt Square (or Point, by the *Table* of ſingle Squares) and place that Root behind the crooken Line, and Subſtract the ſaid Square from the firſt Point, ſubſcribing the remainder underneath the firſt Point.

Fourthly, To this Remainder bring down the next Point, (or Square) and place it on the Right-hand thereof, which call the *Reſolvend*.

Fifthly, Double the Root of the firſt Point, and place it on the Left-hand of the Reſolvend, diſtinguiſhing it therefrom by a crooked Line, thus) which call your *Diviſor*.

Sixthly, Seek how often this Diviſor is contain'd in all the Figures of the Reſolvend, except the laſt towards the Right-hand, and place the Anſwer in the Quotient, and alſo on the Right-hand of the Diviſor.

Seventhly, Multiply the Diviſor by the Figure laſt placed in the Quotient, and Subſtract that Product from the Reſolvend, Subſcribing the Remainder.

Laſtly, To this Ramainder bring down the next Point for a new Reſolvend, and proceed as with the firſt Reſolvend, repeating the Work of the 5th, 6th, and 7th, Precept aforegoing, and continue ſo to do till the Extraction be finiſh'd. A few Examples will make it plain.

The Firſt Example.

I deſire to know the Square Root of 729.

Firſt, The Number being prepared, by pointing it, (according to the firſt Precept) ſtands thus; which conſiſts of two Points, (or Squares) and

$\dot{7}2\dot{9}$

and therefore the Root ſought is to conſiſt of two Figures or Places.

Secondly, Draw a crooked Line (as is before tanght) and the Work will ſtand thus.

```
 .  .
 729(
```

Thirdly, The greateſt Square in the firſt Point, 7, is 4, whoſe Root is 2, wherewith proceed, according to the 3d Precept, and the Work will ſtand thus:

```
      .  .
      799(2
      4  .
      ————
 Rem. 3
```

Fourthly, To the remainder 3 bring down your next Square 29, and work according as you are directed in the 5th, 6th, and 7th, Precepts aforegoing, and the Work will ſtand thus.

```
        .  . (Root.
        729 ( 27.
        4
       ————
    47(329 Reſolv.
 Diviſ.(329 Product.
       ————
        0
```

Here you are to note, That the Points being all brought down, and 0 remaining, ſhews the Works to be finiſhed; and alſo that 729 is an exact Square Number, whoſe Root is found to be 27, as will appear; for if you ſquare 27 (which is the Proof of the Extraction of the Square Root) you will find the Product to be 729, which was the Number propoſed.

Note likewiſe, That if at any time (when you have multiply'd the Number ſtanding in the place of the *Diviſor* by the Figure laſt placed in the Quotient or Root) the Product be greater than the *Reſolvend*, the Work is erroneous, to correct which you are to put a leſs Figure in the Quotient: But if the Remainder is greater than the next Diviſor, put a greater Figure in your Quotient, and proceed according to the 7th Precept, *&c.*

It is alſo worth obſerving, That the Reaſon why every other Figure is pointed, it is becauſe the Square of any one ſingle Figure never exceeds Two places.

The working of two or three Queſtions more (at large) will (I preſume) make the Extraction of the Square Root (of any exact Square Number) intelligible enough to an ordinary Capacity.

More Examples.

What's the Square of 15129?

Firſt, Prepare the Number according to the firſt and ſecond Precepts, and your Work will ſtand thus:

. . .
15129(

Then the Operation of the 3d Precept being perform'd, the Work ſtandeth thus:

. . .
15129(
1
Rem. 0

Then proceed according to the 4th Precept, and the Work, ſtandeth thus:

. . .
15129,(1
1
·51 Reſolv.

The Operation of the 5th Precept obſerv'd, the Work ſtands thus:

. . .
15129(2
1
Diviſ. 2)·51 Reſolv.

The Operation of the 6th Precept being obſerv'd, the work ſtands thus:

. . .
15129(12
1
·51 Reſol.
1ſt Div. 22.) 44 Prod.

Remainder 07

Laſtly, The Operation of the 5th, 6th, and 7th, Precepts, being duly perform'd, the Work will ſtand as you ſee; which ſhews 15129 is an exact Square Number, found by Squaring 123.

```
                  .  .  .
                 15129(123
                 1
              ---------
1ſt Div.22) · 51 Reſol.
              44 Prod.
              ---------
2d Div. 243) · 729 Reſ.
               729 Pro.
              ---------
                 0
```

What is the Square Root of

```
              . . . .
              12299049 (3507 the Root.
              9               ſought.
            ---------
1ſt Diviſor 55) 329 Reſolvend.
                325 Product.
              ---------
2d Diviſ. 700) 490 Reſolvend.
               000 Product.
              ---------
3d Diviſ. 7007)49049 Reſolvend.
               49049 Product.
               ---------
               . . . . .
               0
```

Here

Here you are to note, That when the Diviſor cannot be had in the Reſolvend, (according to the 6th Precept) then, in that caſe, you are to place a Cypher in the Quotient, and alſo on the Right-hand of the Diviſor, and then bring down the Reſolvend a Step lower, and bring down the next Square to it (as in the laſt Example) for a new Reſolvend; or let both the Reſolvend and Diviſor remain, and bring down the next Point to it: The laſt Example again repeated, will ſhew you more plainly.

```
                 .  .  .  .
                 12299049 (3507 the Root.
                 9
                 ———
Diviſor 65)      392 Reſolvend.
                 325 Product.
                 ———
Diviſor 7007)    49049 Reſolved.
                 49049 Product.
                 ———
                   0
```

What's the Square Root of

```
    .  .  .  .
    9042049 (3007 the Root.
    9
   ------
6007) 042049 Reſolvend.
       42049 Product.
      ---------
          0
```

The Operation after the other Method will be as followeth:

```
      .  .  .  .
      9042049 (3007
      9
   60)04  Reſolvend
      00
   -------
  600)0420  Reſolvend.
      .000  Product.
     --------
 6007).42049  Reſolvend.
       42049  Product.
     -----------
          0
```

But if there be given an exact Square Number (to be extracted) conſiſting either of whole Numbers, with Decimals annexed, or of Decimals alone, then point every other Figure in the Decimals, from the place of Units towards the Right-hand, as you did in whole Numbers towards the Left hand, and as many Points as there are in the Decimals, ſo many Decimal Places there will be in the Root ſought.

1. *An Example of Whole Numbers with Decimals.*

What's the Square Root of

· · · ·
141000,25 (372, 5 the Root.
9

Diviſor 67) 510 Reſolvend.
469 Product.

Diviſor 745).4100 Reſolvend.
3725 Product.

Diviſor 7505) 37525 Reſolvend.
37525

0

1. *An*

An Example of Decimals alone.

What's the Square Root of

· · · ·
,6620329 (2573 the Root.
4

Diviſor 45) 262 Reſolvend.
225 Product.

Diviſ. 507) 3733 Reſolvend.
3549 Product.

Div. 5143) 15429 Reſolvend.
15429 Product.

Here you are to take notice, (both in mixt Numbers and Decimals alone) That if the Number of Decimal Places be not even, *viz.* Two, Four, Six, or Eight, *&c.* Places, ſuch a Number is incommenſurable to its Square Root.

Note alſo, When a Decimal Fraction is propoſed for Extraction, which hath two or three firſt Places towards the Left-hand, cut off two of them with a daſh of the Pen, and place a Cypher in the firſt place of the Root; and if the given Decimal have Four Cyphers, then cut them off, and place Two Cyphers in the Root, and proceed to extract the Square of the Remainder.

Thus the Square Root of 002809, is 053. See the Work in the Margin.

```
00 | 2809 (,053 the
   | 25       Root.
 -------
103 (309
     309
 --------
      0
```

Likewiſe the Square Root of ,0000 103041 will be found to be ,00321.

Hitherto hath been ſpoken concerning the Extraction of the Square Root of any Square or Rational Numbers (whether Whole, Mixt, or Decimal) *viz.* Such as are Commenſurable to their Roots.

But when there is given a Number that is not an exact Square, that is, whoſe Root cannot be exactly found, ſuch Numbers are called ſurd Numbers, (and they are Incommenſurable to their Square Roots) and there will (after your laſt Subſtraction is made) be always a Remainder. To extract the Square Root of ſuch Numbers as theſe, obſerve the following Directions.

When a ſurd Number is given to be extracted, conſiſting all of Integers, proceed therewith as with a Rational whole Number, till all the Squares are brought down, and then there will (always) be a Remainder; which ſhews, that the Number propoſed is a ſurd Number; and alſo, that you have already found the greateſt whole Number that the Square Root can conſiſt of; and to find the Decimal Fraction, (to be annexed to the Root found to bring it nearer to the truth) proceed thus; place Two Cyphers on the Right Hand of the Remainder for a new Reſolvend, and find alſo a new Diviſor (wherewith proceed as you have been taught) and there will be produced One Figure more to be placed in the Quotient, which is the firſt Figure (or place of Tens) in the Decimals, and ſo by a continual annexing of Two Cyphers to every laſt Remainder, you may continue the Extraction to as many Decimal Places as you pleaſe; for as many Pairs of Cyphers as are annexed, ſo many Places of Decimals are in the Root, which is to be diſtinguiſhed from the reſt by a Comma.

Example.

What's the Square Root of

$\dot{4}3\dot{6}23$ (208, 86. *&c.* the Root.
4

1*ſt* Diviſ. 408) 3623 Reſolvend.
3264 Product.

2*d* Div. 4168) 35900 Reſolvend.
33344 Product.

3*d* Div. 41766) 255630 Reſolvend.
250596 Product.

Rem. --5004, *&c.*

Note, That (when a ſurd Number is propoſed for Extraction, conſiſting of Decimals alone, or of Decimals annexed to whole Numbers) if your Number of Decimal Places be not even, *viz.* Two, Four, Six, *&c.* they muſt be made ſo by annexing a Cypher to the Right Hand, before you begin to point it.

An

An Example of a Mixt and Surd Number.

What's the Square Root of 321540,037?

```
          321540,0370 (567, 405
          25
          ———
     106) 715
          636
          ———
    1127) 7930
          7889
          ————
  113404) 510370
          453616
          ——————
 1134085) 5675400
          5670425
          ———————
    Rem.  4975, &c.
```

Here you ſee the Number of Decimals is odd, therefore you muſt annex a Cypher to the Right Hand to make it even, and continuing the Extraction after all the Points are brought down, by annexing two Cyphers, (to come nearer the Truth) the Square Root will be 567,045.

An Example of a Decimal, being a Surd Number.

What's the Square Root of

```
       37 (,6082 the Root ſought.
       36
      ----
 1208) 10000
        9664
       -----
12162) 33600
       24324
       -----
 Rem.   9276
```

To prove the Extraction of the Square Root.

The Operation in the Extraction of the Square Root is thus prov'd, *viz.* Multiply the *Root* into it ſelf, and (if there be no *Remainder* after the Work of Extraction is finiſh'd) the Product (if the Work be truly done) will be equal to the Number given. But if after the Work of Extraction is finiſh'd there be a Remainder, then when you have Multiplied the Root by it ſelf, to the Product add the Remainder; and if the Sum be equal to the Number given, the Operation is true, otherwiſe Erroneous.

Thus much for the Extraction of the Square Root, wherein I have been the more large, to the end that it might be render'd intelligible to the meaneſt Capacities.

CHAP. II.

To find the Burthen, and how to Rigg a SHIP.

BEfore we procedd to the Rigging of a Ship, it is proper we ſhould know her Burthen, they having a dependance upon each other. For you can't know how to Rigg a Ship without you know the length and breadth of her, no more than you can know her Burthen; but when ſhe is once Rigg'd (if according to Art or Proportion) you may know her Burthen without taking the length and breadth: Therefore I ſay we ſhall begin gradually, firſt to know her Burthen, and ſo go on.

To find the Burthen of any Ship.

Take the length of the Keel, and the breadth of the Beam, from Plank to Plank, and multiply the one by the other, and the Product multiply by the depth of the Hold; and the laſt Product divided by 100, and the Quotient is the Burthen of a Ship; or, to ſave the trouble of Diviſion, cut off two Figures to the Right Hand of the laſt Product, and the remaining Figures to the Left Hand is equal to the Ship's Burthen.

Example.

The length of a Ship's Keel is *68* Foot.
The breadth of the Beam is *26* Foot.

$$\begin{array}{r} \hline 408 \\ 136 \\ \hline 1768 \end{array}$$

The depth is———— 12

3536
1768

The Ship's Burthen is 212.16.

The proper Diviſors to be uſed here are 100 for *King's Tunnage*, and 95 for *Merchant Tunnage*.

Two thirds of the length of the Keel, and the breadth of the Beam, is the length of the Main-maſt.

Multiply the length of the Main-maſt by 8, and divide by 9 for the length of the Fore-maſt or Boltſprit.

The true length of the Fore-maſt is $\frac{8}{9}$ of the Main maſt.

The Miſſon-maſt is $\frac{3}{4}$ the length of the Fore-maſt.

The length of the Main-yard is the breath of the Beam, and $\frac{1}{2}$ the length of the Keel.

The Fore-yard is $\frac{8}{9}$ the length of the Main-yard.

The Spritſail-yard is $\frac{5}{8}$ of the length of the Main-yard; but for the thickneſs of Maſts, for every 3 Foot in length they ought to be one Inch thick in the Partners, $\frac{7}{8}$ in the middle, and $\frac{3}{4}$ at the head; the Craggick yard $\frac{2}{3}$ the length of the Main-yard.

A Table of the Lengths and Thickneſs of the Maſts and Yards of a Ship that is 25 Yards in length of the Keel, 9 Yards and 2½ Foot length of Beam, and 4 Yards and a Foot in depth of Hold.

	Foot.		*Inches.*
The Fore-top-maſts length	37	thick	13
The Main-top-maſts length	42	——	14
The Spritſail-yard	50	——	16
The Mizon-maſt	52	——	17
The Mizon-yard	51	——	16
The Fore-yard	62	——	20
The Bowſprit	66	——	22
The Fore-maſt	74	——	24
The Main-maſt	84	——	28
The Main-Topſail-yard 11 Inches, and Croſs Jack-yard	36	——	7½
The Fore-Topſail-yard	31	——	9
The Mizon-Top-maſt	27	——	8
The Main-top-gallant-maſt	21	——	8
The Mizon-top-ſail-yard	20	——	6
The Fore-top-gallant-maſt	19	——	6
The Main-top-gallant-yard	19	——	6
The Fore-top-gallant-yard	16	——	5
The Sprit-ſail Top-ſail-yard	14	——	4

A

A Table of the Names, Sizes, and Lengths of each Rope of Rigging belonging to the Mary *and* Briſtol, *whoſe length of Keel, breadth of Beam, depth in Hold, and Tunns, is known.*

Bolt-Sprit, or Sprit-Sail-Yard.

	Mary		Biſtol,	
	Inch.	*Fad.*	*Inch.*	*Fad.*
Sheets	3½	60	3	56
Horſe	2½	4	2	3½
Clulines	2½	34	2	32
Slings for the Yard	5	4½	4½	4
Halliards	3	18	3	18
Lifts	3	40	3	36
Standing Lifts	3½	6	5	5
Lanyards	2	4	1½	3
Penants for Braces	3	3	2½	3
Falls to them	2	64	2	60
Wouldings	6	45	4½	31
Garnets	2	52	2	50
Buntlines	2	18	2	26

Sprit-

Sprit-Sail. Top-Maſt.

	Inch.	*Fad.*	*Inch.*	*Fad.*
Shrouds	2	17½	2	16
Lanyards	1½	9	1	8
Penants of Braces	1½	4	1½	3
Falls to them	1	35	1	32
Tyes	2½	2½	2	2
Hallyards	2	9½	1½	8
Clulines	1½	36	1½	32
Penants of the back Stays	3½	3	3	3
Falls to them	2	9	2	9
Lifts	1½	16	1	14
Parrel Rope	2	2	1½	2

Fore-Maſt.

Penants of Tackles	6½	8	5½	6
Runners of Tackles	5	24	5	22
Falls of Tackles	3½	60	3	56
Shrouds	6	124	5½	91
Lanyard	3½	50	3½	35
Stay	10½	11	8½	10½
Coller	9	2	7½	1½
Lanyard	4	8	3½	7
Puttocks	3	46	2½	40
Parrel Rope	3	14	3	10

	Inch.	*Fad.*	*Inch.*	*Fad.*
Clugarnets	$3\frac{1}{4}$	50	$2\frac{1}{2}$	48
Bowlines	$3\frac{1}{4}$	50	3	40
Bridles	$3\frac{1}{2}$	4	3	4
Penants for Braces	3	6	3	5
Falls to them	$2\frac{1}{2}$	50	$2\frac{1}{2}$	40
Buntlines	2	78	2	70
Sheets	$4\frac{1}{2}$	68	4	60
Tacks	6	30	$5\frac{1}{2}$	28
Lifts	3	58	3	46
Lichlines	$2\frac{1}{2}$	40	2	38
Geeres	$5\frac{1}{2}$	70	5	64
Leg of the Catarp.	2	18	$1\frac{1}{2}$	16
Falls to them	2	10	$1\frac{1}{2}$	8
Stoppers of the Top-ſail Sheets	5	2	4	$2\frac{1}{2}$
Tye	0	0	$5\frac{1}{2}$	16
Hallyards	0	0	3	50

Fore-Top-Maſt.

	Inch.	*Fad.*	*Inch.*	*Fad.*
Pen. of Top-Rope	7	12	5	12
Falls to the ſame	4	40	$3\frac{1}{2}$	38
Shrouds	4	52	3	52
Lanyards	2	16	2	12
Stay	$4\frac{1}{2}$	14	4	14
Lanyard	3	10	$2\frac{1}{2}$	10
Lifts	2	50	2	50

Puttocks

	Inch.	*Fad.*	*Inch.*	*Fad.*
Puttocks	2	24	2	24
Tye	6	7½	5	7
Runner	4½	9½	4	9
Hallyards	3	42	2½	35
Bowlines	2	60	2	50
Bridles	2	10	2	10
Clulines	3	70	2½	65
Penant of Tackles	3½	6	3½	5
Falls to them	2	30	2	30
Sheets	5½	46	4½	40
Parrel Rope	3½	6	3	6
Lichlines	2	14	1½	12
Braces	2	66	2	50
Penant	2½	5	2½	5
Buntlines	2	34	1½	30
Stand. Back-ſtays	4	64	3½	62
Lanyards	2½	10	2	8

Fore-Top-Gallant-Maſt.

	Inch.	*Fad.*	*Inch.*	*Fad.*
Stay	1½	18	1½	15
Tye	2½	3	2	2½
Hallyards	1½	30	1½	30
Lifts	1	20	1	20
Braces	1	60	1	50
Clulines	1½	60	1½	50
Bowlines	1	60	1	50

	Inch.	Fad.	Inch.	Fad.
Bridles	1	5	1	5
Parrel-Rope	1½	2	1½	2
Shrouds	2	15		
Lanyards	1	6		

Main-Maſt.

	Inch.	Fad.	Inch.	Fad.
Penant of Tackle	7	8	6	6
Runners of Tackle	5	26	5	24
Falls of Tackle	3½	60	3½	56
Lifts	3	68	3	54
Shrouds	7	160	6	114
Lanyards	4	58	3½	42
Stay	12	16	11½	15
Coller	10	7	10	5
Lanyards	4	10	4	10
Penant of Garnet	5½	10	5	9
Guy	5	9	4½	8
Fall of the Garnet	3½	37	3½	37
Tacks Taper, Laid	6½	30	6	28
Sheets	4½	70	4½	64
Clugarnets	3	56	2½	54
Bowlines	3	40	3	40
Bridles	3	8	3	8
Penants of Braces	3	6	3	6
Falls	2½	60	2½	54
Geeres	6	80	5½	44

Parrel

	Inch.	*Fad.*	*Inch.*	*Fad.*
Parrel Rope	4½	15	4	12
Lichlines	2½	46	2	40
Buntlines	2	88	2	80
Puttocks	3	48	2½	40
Legs of Catharp.	2	20	2	10
Falls to them	1½	19	1	16
Stop. of Top Sheets	5	3	4½	3
Tackles to ſet up Shrouds	3	20	2½	18
Buſing Tackles	2½	10	2	10
Tye	0	0	6	18
Hallyards.	0	0	4	56

Main-Top-Maſt.

	Inch.	*Fad.*	*Inch.*	*Fad.*
Penant of Tackle	3½	6	3½	6
Falls to them	2	34	2	34
Shrouds	4	74	3½	56
Lanyards	2	30	2	16
Stand Back-ſtays	4	72	4	66
Lanyards	2½	12	2	8
Stay	5	20	4½	18
Lanyards	3	10	2½	10
Lifts	2	64	2	60
Braces	2	68	2	52
Penant	2½	5	2½	5
Bowlines	3½	60	3	42

	Inch.	Fad.	Inch.	Fad.
Bridles	3	10	2½	10
Pen. of Top-Rope	7	13	5	12
Falls to them	4	43	3½	40
Clulines	3	76	3	70
Tye	6	8½	5	7½
Runners	4½	18	4	18
Hallyards	3	47	3	47
Lichlines	2	12	2	12
Buntlines	2	32	2	32
Puttocks	2½	32	2½	32
Parrel-Rope	3½	6	3	5
Sheets	6	50	5	50

Main-Top-Gallant-Maſt.

	Inch.	Fad.	Inch.	Fad.
Stay	2	20	1½	18
Braces	1	64	1	58
Bowlines	1	64	1	60
Bridles	1	5	1	5
Parrel-Rope	1½	2	1	2
Tye	2½	3½	2	3
Hallyards	1½	34	1½	34
Clulines	1½	64	1½	54
Lifts	1	22	1	22
Shrouds	2	14	0	00
Lanyards	1	16	0	00

Mizon

Mizon-Maſt.

	Inch.	Fad.	Inch.	Fad.
Shrouds	4	62	4	56
Lanyards	2	16	2	16
Stay	4	11½	4	10
Lanyards	2½	3	2	3
Hallyards	3½	35	3	35
Parrel-Rope	3½	3	3	3
Truſs	2½	18	2	17
Sheet	3	20	3	18
Tack	3½	3	3	3
Bowlines	2½	16	2	10
Brayles	2	100	1¾	90

Craggick.

	Inch.	Fad.	Inch.	Fad.
Lifts	1½	25	2½	32
Braces	2	36	1½	28
Standing Lifts	2½	6	2	6
Lanyards	1½	4	1	4

Mizon-

Mizon-Top-Maſt.

	Inch.	Fad.	Inch.	Fad.
Shrouds	2	28	2	18
Lanyards	$1\frac{1}{2}$	9	1	9
Puttocks	$2\frac{1}{2}$	12	$1\frac{1}{2}$	8
Braces	1	34	1	28
Bowlines	$1\frac{1}{2}$	34	1	28
Bridles	1	5	1	5
Tye	3	4	$2\frac{1}{2}$	$3\frac{1}{2}$
Hallyards	2	18	$1\frac{1}{2}$	19
Lifts	1	24	1	20
Parrel-Rope	$1\frac{1}{2}$	2	$1\frac{1}{2}$	2
Stay	$2\frac{1}{2}$	8	2	7
Clulines	$1\frac{1}{2}$	32	1	30
Cat Rope	$4\frac{1}{8}$	50	3^{1}	40
Penant of Fiſh-hook Rope	6	7	5	7
Falls of the ſame	$3\frac{1}{2}$	30	3	30
Stop at the Bow	6	28	$4\frac{1}{2}$	18
Shank Panter	5	18	$4\frac{1}{2}$	15
Stop at the Bits	9	8	8	8
Lanyards	3	12	3	12
Vial	9	30	$7\frac{1}{2}$	22
Pen. of wind. Tack.	8	10	8	9
Falls of the ſame	5	45	5	45
By-Ropes	6	88	$5\frac{1}{2}$	80

	Inch.	*Fad.*	*Inch.*	*Fad.*
Stream-Anchor Buoy Ropes	4	30	4	30
Boat-rope and Slings	7	37	5½	35
Gueſt-Rope to it	4	32	3½	30
Pinnace-Rope and Slings	6	36	0	00
Gueſt-rope to it	4	32	0	00
Two pair of Boat-Slings	5	10	5	10
Two pair of Hogſets	4	8	4	8
Ordnance Slings	7	6	7	6
For Robins and Ear	1½	260	1½	200
And Clu *S*eiſings for one compleat Suit of Sails	1	104	1	300

Here follows an eaſie and exact Method for all *Boatſwains*, *Gunners*, or *Carpenters* of Ships, whereby they may know what quantity of Stores they have in the Ship at any time, without the trouble of a Survey.

The Rule or Method for Boatſwains, Gunners, or Carpenters, &c.

I Thought fit to propoſe this Method for the Eaſe of the Warranted Officers belonging to the Queen's Navy; and it may likewiſe ſerve for Officers in the Merchants Service, who are oblig'd to attend the Ship's Buſineſs all the Day long, and cannot take ſo much time as to caſt up their Accompts of Expence: And if they do but obſerve the Rule of the following Table, they may in half an Hour know their

Expence of Stores for a whole Month; it being no more trouble, but only to enter the head of the Table for the Month, and bringing down of their Finger in the Column of the Month till it come right over againſt the quantity of the Stores Expended in that Month, and Subſtract the Expence from the whole Charge, or from the Remainder of the former Month, and by this means they know the quantity of Stores that they have ſtill Remaining, and can never be at a loſs for not know.

knowing what quantity of Stores they have in the Ship.

Example.

Suppoſe a Botſwain of a Man of War makes a demand for 235 Yards of *Holland* Duck, and in the Month of *November* he hath occaſion to Expended 53 Yards, and in the Month of *December* he has Expended 14 Yards, in *January* 21 Yards, in *Februaay* 18 Yards, and in *March* 39 Yards, and he would know how much he hath in Store at the end of each Month.

Whole Charge, 235 Yds.	*Novemb.*		*Decemb.*		*January*		*Februa.*		*March*	
	Exp	Re.	Exp	Re.	Exp	Re.	Exp	Re.	Exp	Re.
	53	182	14	168	21	147	18	129	39	90

An Abſtract of Stores Expended.		Whole Charge	*Auguſt* Expended	*Auguſt* Remains	*Sept.* Expended	*Sept.* Remains	*Octob.* Expended	*Octob.* Remains
Lines	Cabin	00						
	Deepſea	2	00	2	00	2	00	2
	Laſhing	00						
	Logg	23	00	23	4	19	4	15
	Tarr'd	00						
	White	3	00	3	1	2	0	2
Marline	Tarr'd	l. 40	2	38	00	38	00	33
	White	l. 17	3	14	3	11	00	11
Rope	Netting	00						
	Old for Round	00						
Spun-yarn		00						
Twine white		l. 56	00	56	5	51	00	51
Glaſſes	Watch	1	00	1	00	1	00	1
	half Watch	3	00	3	00	3	00	3
	half Hour	4	01	3	00	3	00	3
	half Minute	6	00	6	00	6	2	4
Anchor of	28 Cwt.	1	00	1	00	1	00	1
	27 Cwt.	1	00	1	00	1	00	1
	25 Cwt.	1	00	1	00	1	00	1
	7½ Cwt.	1						
	3½ Cwt.	1						
Andirons		pr 1	00	1	00	1	00	1

Nov.		*Dec.*		*Janu.*		*Febr.*		*Mar.*		*April*		*May*	
Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remain
00	3	01	1	1	00	00	00						
3	16	00	16	00	16	5	12	00	12	0	[illegible]	1	11
1	1	00	1	00	1	1	00						
2	31	00	31	06	25	00	21	07	18	00	18	00	18
8	4	09	4	20	04	00	4	00	4		[illegible]	1	2
3	48	4	44	00	44	7	37	9	18	14	04	00	04
00	1	00	1	00	1	00	1						
1	2	00	2	1	1	00	1	00	1	01	00		
00	3	1	2	00	2	01	1	00	1	01	00		
00	4	00	04	1	03	06	3	00	3	00	3	1	2

An Abſtract of Stores Expended		Whole Charge	Aug.		Sept.		Octob.	
			Expended	Remains	Expended	Remains	Expended	Remains
		pr						
Bilbos with 5 Sheckles		1		1		1		1
Boom Irons		4		4		4		4
Chain top		2		2		2		2
Creepers		1		1		1		1
Crows		2		2		2		2
Eſſes of Kettles		1		1		1		1
Fenders		1		1		1		1
Woodſids Splicing		2		2		2		2
Fire	Fork	1		1		1		1
	Shovel	1		1		1		1
	Tongs	1		1		1		1
Gapnels	Boat	1		1		1		1
	Hand	1		1		1		1
	Fere&Chain	2		2	1	1	1	
Gromets and Staples								
Hamers ſide		2		2	2	2		2
Hatchets		6		6	1	4		4
Hooks	Boat	3	1	2		1	1	
		pr						
	Cann	1		1		1		1
	Fiſh	2	1	1	1			
	Fleſh	1		1				1
	Gamming							
		pr						
	Kettle	1		1		1		1
		8	1	7	1	6	1	5
Locks Hanging		4		4		4		4
Martin Spikes		16		16		16	2	14

Nov.		*Dec.*		*Janu.*		*Feb.*		*Mar.*		*April*		*May*	
Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains
01													
1	3	1	2		2		2		2		2	1	
	2	00	2		2	1	1	1					
	1	1											
	2		2		1		2		2		2		2
	1		1		1		1		1		1		1
	1		1		2		1		1		1		1
	2		2				2		2		2		2
	1		1	1	0								
	1		1		1		1		1		1		1
	1		1		1	1							
	1		1		1		1		1		1		1
	1		1	1	1								
	2		2		2		2	1	1	1			
1	3		3	1	2		2		2	1	1	1	
	1		1		1		1		1		1		
	1		1		1		1		1		1		
												1	
	1		1		1								
1	4		4	1	3	1	3	1	2	1	1	1	
	14	1	13		13		13		13		13		

An Abſtract of Stores Expended		Whole Charge.	Auguſt		Septem.		Octob.	
			Expended	Remains	Expended	Remains	Expended	Remains
Mauls Top		2	00	2	00	2	00	2
Nails Hamocks		600	00	200	400	200	00	200
Blacking Barrels		12	00	12	2	10	2	8
Bruſhes Large		2	00	2	00	2	1	1
		yr.						
Cloth	Duck	432	14	284	43	241	30	211
	Suffolk	59	9	50	13	27	00	37
	Nayeles	16	0	16	4	12	00	12
	Ipſwich	25	6	19	00	19	00	19
	Victory	240	00	240	144	69	36	60
	Old	00						
Colours	Breadth							
	Enſigns of	3	1	3		3	1	2
	Do. Whitt.	1	00	1		1		1
	Flags		1					
	Jacks	3	02	2		2		2
	Do. Whitt.	1		1		1		1
	Pendants	4	150	3		3	1	[illegible]
	Do. Whitt.	1		1		1		1
	Vanes	00						
Waſte Cloths		1pr		1		1		1
Top Armour								
Hamockers		200		50		50	10	40
Compaſſes		10		10		10		10
1 Do. Braſs Box		2		2		2		2
Kettles	Coppers	2		2		2		2
	Fiſh	1		1		1		1
	Small	1		1		1		1

Nov.		*Decem.*		*Jan.*		*Feb.*		*Marc.*		*April.*		*May.*	
Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains
	2		2		2		2		2		2		2
100	100		100		100	100							
	8		8	2	6	1	5		5	1	4	1	3
1													
13	198	32	167	77	90		90		90	28	62	35	27
	37		37	13	24		24		24	12	12	5	7
3	9		9		9		9	2	7		7	6	1
6	13		13	5	8		8		8	2	6		6
	56	4	56	14	42		42	12	30		30		30
	2		2		2		2		2	1	1		1
	1		1		1		1		1		1		1
	2	1	2		2		2		2		1		1
	1		1		1		1		1		1		1
	1		1		1	1							
	1		1		1		1		1		1		1
	1		1		1		1		1		1	1	
	40	10	30		30		30	12	18		18		18
1	9	1	8	1	7	1	6	1	5	1	4		4
	2		2		2	1	1		1		1		1
	2		2		2		2		2		2		2
	1		1		1		1		1		1		1
	1	1											

An Abſtract of Stores Expended	Whole Charge.	*Auguſt*		*Septem*		*Octob.*	
		Expended	Remains	Expended	Remains	Expended	Remains
Cordage Inch							
Cable 15 ½	6	00	6	1	5	1	4
Do. 11.	1	00	1	00	1		1
Do. 8	1	00	1	00	1		1
Cablets 5	1	00	1	00	1		1
Do. 3 ½	1	00	1	00	1		1
	fa.						
Hauſers 6 ½	110	00	110		113	30	80
Do. 6	220	17	203		203	52	151
Do. 5	190	00	190		190	64	126
Coyle of 4 ½	300	00	300	54	246	00	246
Do. 3 ½	255	89	166	66	100	00	100
Do. 3	330		334	00	330	49	281
½	780	116	764	64	700	86	614
2	650	157	593	40	553	00	553
1 ½	460	30	430	90	340	95	245
1	720	00	720	300	420	00	420
Spar ¾	300	100	200	100	100	100	00
Viol 8	1	0	1	0	1	00	1
Main tack 8							
	fa.						
Junk	65	15	40	10	50	00	30
Single Blocks of 18 Inch	6	00	6	1	5	00	5
Do. 16	12	5	7	00	7	1	6
Do. 12	13	1	12	4	8	00	8
Do. 10	16	3	13	1	12	4	8
Do. 7	12	00	12	3	9	5	4
Do. 6	6	1	5	00	5	00	5

Nov.		*Decem.*		*Jan.*		*Feb.*		*Marc.*		*April.*		*May*	
Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains
00	4		4		4		4		4		4		1
	1		1		1		1		1		1		1
	1	1	1										
	1												
	80	00	80	15	65		65		65	10	55		55
	151	40	111		111	28	283		83	20	63		63
4	84		84	50	34		34	16	18		18	14	4
	246	59	117		187		187	87	100	100			
40	60	31	20		29		29	11	18	2	16	12	4
	281	64	217		217	38	179	60	119		119	100	19
20	594		594		594	94	500	28	472	2	470		470
70	483	69	414	30	384		380	24	364	64	300	100	200
40	205	16	189		189	80	109	75	34	12	22	22	
100	320	55	265	65	200		200	20	180	180			
00	1		1		1		1			1	1		1
00	30	15	15		15	3	12		12	6	6	6	
1	4		4		4		4	1	3	1	2	1	1
	6	1	5	1	4	1	3	1	2		2		2
	8		8	8									
	8		8	1	7	3	4	1	3		3	1	2
	4		4	3	1	1							
1	4	1	3	1	2		2		2		2		2

An Abſtract of Stores Expended		Whole Charge	*Aug.*		*Sept.*		*Octob.*	
			Expended	Remains	Expended	Remains	Expended	Remains
	Inc							
Snarch of	16	2	00	2		2	1	1
Double of	16	3	1	2		2		2
Double of	26	2	00	2		2		2
Top. Ir. Bd.	16	2	1	1		1	1	
Top Tackle	26	2		2		2		2
Viol of	36	2		2		2		2
Wine Tackle double		1		1		1		1
Do. Treble		1		1		1		1
Boats Long		1						
Pinnace		1						
Barge		1						
Skiff		1						
Boat-Hooks, Spars		4		4		4	1	3
Bowls		3		3		3		3
Brooms								
Buckets		12	3	9		9	1	8
Buoys Cann		3		3		3	1	2
Wood		1		1		1		1
Commanders		2		2		2		2
Fids for Splicing		3	1	2	1	1	1	
Hand-Spikes		10	2	14		14	4	10
Oars Long-boat		30		30	5	27		27
Pinnace		20		20		20	4	16
Barge		20		20	1	19		19
Skiff		16	1	15	1	14	1	13
Runlets for Oil		1		1		1		1

Nov.		*Dec.*		*Janu.*		*Febr.*		*Mar*		*Apr*		*May.*	
Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains
1													
1	1	1											
	2		2	1	1	1							
	2		2		2								
	1		1		1		1		2		2		2
	1		1		1	1			1		1		1
	3		3	1	2		2	1	1	1			
	3		3	1	2		2		2	1	1	1	
	8		8	1	7	1	6				6	4	2
	2		2		2		2		2		2	2	
	1		1		1		1		1		1	1	
	2		2		2	1	1						
	1	3	7		7		7	2	5	1	4	4	
	16	00	16	2	14	1	13	2	11		11	1	10
2	17	1	16		16	2	14		14	11	3		2
1	12	1	11	1	10	1	9	1	8				
1	00												

An Abſtract of Stores Expended.		Whole Charge	August Expended	August Remains	Sept. Expended	Sept. Remains	Octob. Expended	Octob. Remains
Scoops		2	00	2	00	2	1	1
Serving Mallets		3	00	3		3		3
Balaſt Shovels		24	00	24		24		24
Thoales								
Buntines		pr 100	86	14		14		14
Fiſh Gigs		6	00	6		6	1	5
Harping Irons		6	1	5		5		5
Needles	Boltrop	8		8	1	8		7
	Sail	56	15	41		41		41
	Pots	1		1		1		1
Puttock Plats		9		9		9		9
Iron	Scrapers	18	1	17		17	2	15
	Spindles	3		3		3		3
	Spits	2		2		2		2
	Thimbles	48	5	43		43		43
Hand Lanthorns								
Leads	Deepſea	2		2		2		2
	Hand	3		8		3		3
Leather Buckets		8		8		8	2	6
Hoſe		1		1		1		1
Oil								
Roſin		l. 52	8	44	9	35		35
Tallow		200	50	150		150	50	100
Tar-Barrels		4	1	3	1	2		2
Balaſt-Basket		10	2	8		8	1	7
Thrumes		L. 8		8	4	4	4	

Nov.		*Dec.*		*Janu.*		*Febr.*		*Mar.*		*April*		*May*	
Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains	Expended	Remains
1													
00	3	1	2			1	1	1					
3	21		21		2	3	18		18	5	13	1	13
	14	6	8		8	4	4		4		4	4	
	5		5		5	2	3		3		3		3
1	4		4	1	3		3		3		2	1	1
	7	1	6	1	5	1	4	1	3	1	2	1	1
	4	8	33		33	6	27	2	18	1	18		18
	1		1	1									
1	8		8	1	7	1	6		6		6		16
	15		15		15	1	14		24		14		14
	3		3		3		3		3		3		3
	2		2		2		2		2		2		2
	43	2	41		41	4	37	4	37		33	10	23
	2		2		2	1	1		1		1		1
	3	1	2		2		2	1	1		1	1	
	6	1	5	1	4	1	3	1	2	1	1	1	
	1		1	1									
	25	15	20		20	9	11		11		11		11
	100	28	72	13	59		59	28	31	8	23	20	3
1	1	1											
	7	2	5		5	1	4		4		4		4

An Abſtract of Stores Expended		Whole Charge.	*Aug.*		*Sept.*		*Octob.*	
			Expended	Remains	Expended	Remains	Expended	Remains
Sails.								
Sprit-ſail	Courſes	2		2		2		2
	Top-ſail	2		2		2		2
Fore	Courſes	3		3		3		3
	Bonnets.	00						
	Top-ſails	3		3		3		3
	Top-Gal.-Sail	2		2		2		2
Main	Courſes	3		3		3		3
	Bonnets	00						
	Top-ſails	3		3		3		3
	Top-Gal.-Sail	2		2		2		2
Mizen	Courſes	2		2		2		2
	Top-ſails	2		2		2		2
II. Stays.	Main	1		1		1		1
	Mizen	1		1		1		1
	Main-Top	1		1		1		1
	Fore-Top	1		1		1		1
Shivers	Braſs	2		2		2		2
	Iron	2		2		2		2
Grindſtone		1		1		1		1
Tine Trucks		4		4		4		4
Wood		00						
Breckoes Ir. Bd.		12	1	11	1	10	1	9
Dead Eyes		16	2	14		14	3	11
Cat-block Ir. Bd,		2	00	2		2	00	2
Do. Hooks		2	03	2		2	00	2

Nov.		*Dec.*		*Jan.*		*Febr.*		*Mar.*		*April*		*May*	
Expended	Remains	Expended	Remains	Expended	Remains	Exdended	Remains	Expended	Remains	Expended	Remains	Expended	Remains
1	1	00	1	00	1	00	1	00	1	00	1	1	00
00	2	00	2	00	2	1							
00	3		2	00	2	00	2	00	2	00	2	00	2
		1											
1	2		2	1	00								
00	2	00	2	00	2	00	2	1	1	00	1	1	00
00	3	00	2	00	2	00	2	00	2	1	1	1	00
		1											
00	3		3	1	2	1	1	00	1	00	1	00	1
00	2	00	1	00	1	00	1	00	1	00	1	00	1
00	2	1	2	00	2	00	1	00	1	00	1	00	1
			2	00	2	00	2	1	1	00	1	00	1
00	2	00											
00	1	00	1	00	1	00	1	00	1	00	1	00	1
00	1	00	1	00	1	00	1	00	1	00	1	00	1
00	1	00	1	00	1	00	1	00	1	00	1	00	1
00	1	00	1	00	1	00	1	00	1	00	1	00	1
00	2	00	2	00	2	00	2	1	2	1	1	00	1
00	2	00	2	00	2	1	1	00	1	00	1	1	00
00	1	00	1	00	1	00	1	00	1	00	1	00	1
01	3	00	3	00	3	1	2	00	2	00	2	1	1
1	8	1		1	6	1	5	1	4	1	3	1	2
00	11	3		4	4	00	4	00	4	00	4	4	00
00	2	1		00	2	00	2	00	2	1	1	00	1
00	2	00		1	00								

Directions for making of Maſts and Yards according to Proportion.

For the Main-maſt $\frac{2}{3}$ of the length of the Keels, and the breadth of the Beam is the length of it.

But for the thickneſs of Maſts this is a true proportion, that for every 3 Foot in length, they ſhould be 1 Inch thick, in the Partners $\frac{7}{8}$ parts of an Inch, in or about the middle, and $\frac{3}{4}$ at the Head.

Main-top-maſt muſt be $\frac{5}{9}$ parts of the length of the Main-maſt, and $\frac{5}{8}$ for thickneſs.

Main-top-gallant-maſt $\frac{2}{9}$ the length of the Main-maſt, Fore-top-gallant-maſt proportionable.

The Fore-maſt muſt be for its length $\frac{8}{9}$ parts of the Main-maſt, and the thickneſs proportionable.

The Miſſen-maſt is $\frac{4}{5}$ parts of the length of the Fore-maſt, if it ſteps in the Hold, and the Miſſen maſt proportionable.

For Yards.

The Main-yard muſt be in length $\frac{5}{7}$ parts of the length of the Main-maſt, and for every 3 Foot in length, 1 Inch thick in the Slings.

The Fore-yard muſt be $\frac{6}{7}$ parts of the Main yard in length, thickneſs proportionable.

The Miſſen-yard muſt be a Medium betwixt both, and for every 6 Foot in length, it muſt be 1 Inch thick in the Slings.

Main-top-ſail-yard $\frac{4}{7}$ parts of the length of the Main-yard.

The Fore-top-ſail-yard in like proportion to the Fore-yard.

Sprit-ſail-yard $\frac{5}{8}$ of the length of the Main-yard, and for thickneſs as before.

Crojack-yard, $\frac{54}{10}$ of the length of the Main-yard, and as for thickneſs that ſame proportion with the Miſſen-yard in the Slings.

Sprit-ſail, Top-ſail, and Miſſen-top-ſail, Yards $\frac{24}{17}$ parts of the Main-yard in length, or for the Miſſen-top-ſail-yards length $\frac{1}{2}$ for the Main yard.

Main top-gallant yard $\frac{21}{17}$ parts of the Main-yard is the length of it, and the Fore-top gallant-yard hath the ſame proportion to the Fore-yard.

For any Yards.

The thickneſs in the Slings is the ſame with the firſt Quarter Yard, $\frac{2}{3}$ at the next half Quarter Yard, and $\frac{1}{3}$ at the Yard Arm, and this is a true Proportion of all Yards, except the Mizen Yard, whoſe Dimenſions is as followeth, *viz.* $\frac{11}{12}$ parts of the thickneſs in the Slings, is the thickneſs of the firſt lower Quarter, and $\frac{2}{3}$ at the lower end, and $\frac{7}{8}$ parts is the thickneſs at the upper Quarter, and $\frac{1}{4}$ and the upper end, and for the Mizen-maſt, $\frac{09}{10}$ parts of the thickneſs in the Partners, is the thickneſs in the middle, $\frac{2}{3}$ under the Hooes, $\frac{2}{4}$ at the Head, and $\frac{3}{4}$ in the Step.

Proper and Eaſie Rule for finding the length of Maſts.

Note, as I have ſaid before, that $\frac{2}{3}$ of the length of the Keel, and the breadth of the Beam is the length of the Main-maſt. Therefore I Multiply the length of the Keel by 2, and the Product I Divide by 3, and to what comes in the Quotient I add the breadth of the Beam, and the Sum of theſe 2 Numbers; when added, is the length of the Main-maſt.

Example.

Suppoſe a Ship to be 105 Foot by the Keel, and 32 Foot by the Beam, and the length of her Main-maſt is required,

105
2
———
210 $\cancel{2}\cancel{1}\cancel{0}$($70\frac{2}{3}$ of the length of the Keel-
——— $\cancel{3}\cancel{3}$(32-- Breadth of the Beam.
———
102 Feet the length of the
——— Main-maſt.

Suppoſe a Ship to be 75 Foot by the Keel, and 29 Foot by the Beam. I would know the length of her Main-maſt.

75
2
——— $\cancel{1}\cancel{5}\cancel{0}$(50 Foot $\frac{2}{3}$ parts of the Keel.
150 $\cancel{3}\cancel{3}$(29 Foot breadth of the Beam.
——— ———
79 Foot length of the Main-
——— maſt.

The

For finding the thickneſs of Maſts.

I have told already, how that Maſts ſhould for every 3 Foot in length be 1 Inch thick in the Partners, $\frac{7}{8}$ parts of an Inch in the middle, and $\frac{3}{4}$ at the Head therefore I Divide the length of the Maſt by 3, becauſe 3 Foot of the Maſt in length requires 1 Inch in thickneſs, and the Quotient of the Diviſion is the thickneſs of the Maſt in Inches in the Partners. Then becauſe the $\frac{7}{8}$ parts of the thickneſs of the Maſt in the Partners is the thickneſs of the Maſts in the middle, I Multiply the Inches of the Diameter of the Maſt found in the partners by 7, and the Product I Divide by 8 and the Quotient of that Diviſion is the thickneſs in Inches that the Maſt ſhould be in Diameter in the middle; then $\frac{3}{4}$ of an Inch at the Head being the Proportion for 1 Inch in the Partners, therefore I Multiply the Inches of the Diameter of the Maſt in the Partners by 3, and that Product I divide by 4, and the Quotient of that Diviſion is the thickneſs in Inches that the Maſt ſhould be at the Head; and by this and the foregoing Rules, you may find the lengths and the thickneſs either of Maſts or Yards, whether in great or ſmall Ships, according to the trueſt Proportion.

Example.

Suppoſe a Maſt to be 102 Foot in length, and it is required how thick this Maſt ought to be, according to Proportion.

$\cancel{1}$

$\cancel{1}\cancel{0}\cancel{2}($34 Inches thick in the Partners.

$\cancel{3}\cancel{3}$

34

7 $\cancel{1}\cancel{7}(6$

---

238 $\cancel{2}\cancel{3}\cancel{8}(29\frac{6}{8}$ parts in the Middle.

$\cancel{8}\cancel{8}$

34

3 $\cancel{3}(2$

$\cancel{1}\cancel{0}\cancel{2}(25\frac{10}{02}$ Inches at the Head.

102 $\cancel{4}\cancel{4}$

Example.

Suppoſe a Maſt to be 79 Foot in length, and you would know how thick it muſt be.

~~1~~ (1
~~79~~(26 $\frac{1}{3}$ Inches thick in the Partners,
~~33~~

26
3 ~~3~~ (2
~~78~~(19 $\frac{2}{3}$ parts of an Inch at the
78 ~~44~~ Head,

26 ~~2~~
7 ~~2~~(6
~~182~~(22 $\frac{6}{8}$ for the middle.
182 ~~88~~

To

To find the Lengths and Thickneſs of Maſts and Yards by the Pen.

We ſhall begin with the Main-maſt of a Ship, whoſe length of Keel is 73 Foot, breadth of the Beam 28.5 Foot, the depth of the Hold 12 Foot.

The only Rule to find the length of the Main-maſt, is to add the breadth of the Beam, and the depth of the Hold together, and divide the Product by 1.5, and the Quotient is the Yards in length the Main-maſt of the Ship muſt be.

Example.

The breadth of the Beam	28.5
The depth of the Hold	12.0

```
1.5)40.5(27
    105
    000
```

The length of the Main-maſt ſought is 27 Yards, or 81 Foot.

Thoſe that are not very expert at Diviſion, may make uſe of the following Multiplicator, which will perform the ſame as the Diviſion does, and will be a great deal eaſier for the Learner, if he do but obſerve to prick off the Decimals to the Right-hand, as is directed in the foregoing Work.

Example.

The Summ of the breadth and depth is 40.5, the which I multiply by the proper Multiplicator *.6666*, and the Product is *26.99730*, which is *26* Yards, and *99* hundredth parts of a Yard, which wants not one ſecond to make it 28 Yards, equal to the former Work.

To find the thickneſs of the foregoing Maſt, or any other Maſt of the Ship, you are to take the length of the Maſt mentien'd in the foregoing Table, and ſay by the Rule of Proportion.

If 84 give 28 (as in the Table) what will 81 give?

84 28 81

28
224

2268 (27 Inches.
588
000

Here we find the thickneſs of the Main-maſt of the propounded Ship to be 27 Inches; now to find the thickneſs or length of the other Maſts of the ſame Ship.

If for the thickneſs of any of the Maſts, you muſt work by the foregoing Rule, taking out the length of the Maſt you require from the foregoing Table; and as the length there requires ſo much, what will the length found require?

You muſt find your lengths of the ſeveral Maſts and Yards by the Rule before directed.

Suppoſe I was to find the length of the Fore-maſt, having the length of the Main-maſt, I multiply the length of the Main-maſt by 8, and divide the Product by 9, and the Quotient is the length of the Fore-maſt required.

As for Example: The length of my Main-maſt is 81 Foot, the which I multiply by 8, and divide by 9, and the Quotient is 72, the length of the Fore-maſt ſought.

Now if you would have the length of the Mizon-maſt, being that it is $\frac{3}{4}$ of the length of the Fore-maſt, you muſt multiply the length of the Fore-maſt by 3, and divide the Product by 4, and the Quotient is the length of the Mizon-maſt; the Fore-yard is in proportion to the Main-yard, as the Fore-maſt is in proportion to the Main-maſt.

Thus we have inſerted moſt material things as to a Ship's Rigging; but becauſe the way here inſerted will be troubleſome and tedious, unleſs to ſome Artiſts who take pleaſure therein, we ſhall ſet down a plain and eaſy way, by which any Ship may be Rigg'd with a great deal of eaſe; and ſhall be as follows.

Rigging for the Fore-maſt.

$\frac{2}{3}$ of the length of the Maſt is the firſt length of the Shrouds; and afterward give allowance as they riſe upon the Head of the Maſt. $\frac{1}{2}$ the

½ the length of the Shroud is the length of the Penants; if double, ⅔.

The length of the Maſt is the length of the Stay.

Thrice the length of the Shrouds is the length of the Lifts.

Three times the length of the Shrouds is the length of the Clugarnets.

Twice the length of the Maſt from the Deck to the Croſs-trees, is the length of the Buntlines.

Legs, Horſes, 1 length and ⅕ of the Yard.

Twice the length of the Main-yard is the length of the Leechlines.

Twice the length of the Main-yard for the Braces.

Parrel Rope ⅔ of the Yard.

Two and a half the length of the Main-yard for the Fore-ſheets.

Four times the length of the Maſt is the length of the Jeers.

Twice the length of the Main-yard is the length of the Buntlines; and the ſame length for the Topſail Sheet.

Rigging for the Main-maſt.

The length of the Shrouds is the

length of the Penants; if double, $\frac{2}{3}$ of the Shrouds.

$\frac{2}{3}$ the length of the Maſt, is the length of the Shrouds.

The length of the Maſt, and $\frac{1}{8}$ part of the length of the Maſt, is the length of the Stay.

Four times the length of the Maſt, from the Deck to the Croſs-trees, is the length of the Jeers; if fourfold Jeers, 5 times.

1 length and $\frac{1}{2}$ of the Main-yard is the length of the Studin-ſail Hallyards.

2 lengths and $\frac{2}{3}$ of the Main-maſt is the length of the Stay-ſail Hallyards.

Horſes one length and $\frac{1}{5}$ of the Yard.

Parrel-ropes $\frac{2}{3}$ of the Yard.

Three times the length of the Main-yard is the length of the Lifts.

Twice and $\frac{1}{2}$ the length of the Main-yard is the length of the Braces.

The length of the Main-yard is the length of the Bowlines.

Twice $\frac{1}{2}$ the length of the Main-yard is the length of the Clugarnet.

Buntlines muſt be 4 times the length of the Maſt for Falls and Legs.

Twice the length of the Main yard is the length of the Leechlines.

The length of the Main-yard is the length of the Tacks; Runners muſt be the ſame length.

Twice $\frac{1}{2}$ the length of the Main-yard is the length of the Sheets.

Twice the length of the Maſt is the length of the Knaveline.

Twice the length of the Main,yard is the length of the Top-ſail Sheets.

Twice the length of the Maſt is the length of the Slabline.

Rigging for the Mizon-Maſt.

Four times the length of the Maſt, from the Deck to the Croſs-trees, is the length of the Hallyards.

Twice the length of the Maſt, from the Deck to the Croſs-trees, is the length of the Braytles.

1 Length and $\frac{1}{3}$ of the Yard is the length of the Sheet.

The Tack about Three Fathoms.

The length of the Maſt is the length of the Shrouds.

$\frac{1}{2}$ of the Shrouds is the length of the Penants.

The length of the Main-yard is the length of the Burton Fall.

The length of the Maſt is the length of the Stay, wanting the length of the Head of the Maſt, if it ſteps in the Hold.

The length of the Croſs Jack Yard is the length of the Bowlines.

Rigging for the Fore Top Maſt.

One third the length of the Shrouds is the length of the Penants.

Once the length of the Maſt is the length of the Shrouds.

Once the length of the Fore Yard is the length of the Burtons.

Pendants of the Burtons half the length of the Top-ſail Yard; and falls for them twice the length of the Yard.

Twice and half the length of the Fore Yard is the length of the Lifts.

Thrice the length of the Yard is the length of the Culine.

Twice and half the length of the Fore Yard is the length of the Braces.

Twice the length of the Fore Yard is the length of the Bowlines.

Twice the length of the Fore Top-ſail Yard is the length of the Leechline.

Once the length of the Top Maſt is the length of the Tye.

Once and $\frac{1}{2}$ the length of the Fore Yard is the length of the Runner.

Thrice the length of the Fore Yard is the length of the Hallyards.

Once and one third the length of the Maſt is the length of the Stay.

Once and a half the length of the Fore Yard is the length of the Back Stays.

Twice the length of the Fore Yard is the length of the Buntlines.

Rigging for the Main Top Maſt.

Half the length of the Shrouds is the length of the Penants.

Once the length of the Maſt is the length of the Shrouds.

Once and a half the length of the Maſt is the length of the Stay.

Twice and a half the length of the Main Yard is the length of the Braces.

One third of the length of the Main Yard is the length of the Burtons; Pendants of the Burtons half the length of the Topſail Yard; and Falls for Burtons is two lengths and one third of the Main Yard.

Twice and a half the length of the Main-yard is the length of the Lifts.

Twice the length of the Main-yard is the length of the Buntlines.

Thrice the length of the Main-yard is the length of the Clulines.

Once the length of the Top-maſt Shroud is the length of the Tye.

Once the length of the Main-yard is the length of the Runners.

Three times the length of the Main-yard is the length of the Hallyards.

Two times the length of the Top-ſail-yard is the length of the Leechlines.

Twice the length from the Deck to the Hounds is the length of the Buntlines

Once and one fourth the length of the Main-ſhrouds is the length of the Top-rope.

Four times the length of the Main-maſt is the length of the Top-rope Fall.

One third of the Top-ſail-yard is the length of the Penants for Braces.

Once and a half the length of the Yard is the length of the Back Stays.

Rigging for the Mizon-Top Maſt.

One third of the Shrouds is the length of the Penants.

The length of the Maſt, from the Croſs-trees to the Heel, is the length of the Shrouds.

Once and half the length of the Maſt is the length of the Stay.

Three times the length of the Maſt is the length of the Lifts.

Once and one third the length of the Mizon-yard is the length of the Braces.

Once and a half the length of the Croſs-jack-yard is the length of the Bowlines.

Twice and a half the length of the Croſs-jack-yard is the length of the Croſs-jack-Braces; if double, two lengths and a half of the Mizon yard.

Twice and a half the length of the Croſs-jack-yard is the length of the Sheets.

Twice and a half the length of the Croſs-jack-yard is the length of the Clu-lines.

Once and two thirds the length of the Mizon-yard is the length of the Hall-yards.

Once the length of the Top-maſt, from the Croſs-trees to the Heel, is the length of the Tye.

Rigging for the Fore-top Gallant.

Once the length of the Maſt, from the Croſs-trees to the Feed-hole, is the length of the Shrouds.

Once and a half the length of the Fore Yard is the length of the Stay.

Three times the length of the Maſt is the length of the Lifts.

Twice and a half the length of the Fore Yard is the length of the Braces.

Twice and a half the length of the Fore Yard is the length of the Bowlines.

Twice and a half the length of the Fore Yard is the length of the Hallyards.

Rigging for the Main-top-gallant-maſt.

Once the length of the Maſt, from the Croſs-trees to the Heel, is the length of the Shrouds.

Two lengths and one fourth of the Top-maſt Shrouds is the length of the Stay.

Thrice the length of the Top-gallant Maſt is the length of the Lifts.

Once the length of the Yard is the length of the Parrel-Rope.

Twice the length of the Main Yard is the length of the Braces.

Twice the length of the Main Yard is the length of the Bowlines.

The length of the Maſt is the length of the Tye.

Twice and one fourth the length of the Main Yard is the length of the Hallyards; if ſingle, one length, and two thirds of the Main Yard.

Twice the length of the Main Yard is the length of the Top-Rope.

For the Spritſail Top Maſt.

The length of the Maſt, from the Heel to the Croſs-trees, is the length of the Shrouds.

Thrice the length of the Maſt is the length of the Hallyards.

Thrice the length of the Maſt is the length of the Lifts.

Twice the length of the Sprit ſail Yard is the length of the Clulines.

Twice the length of the Sprit-ſail Yard is the length of the Braces.

Twice the length of the Top-ſail Yard is the length of the Cranlines.

The Pendant of the Cranline is half of the Maſt.

Once the length of the Maſt is the length of the Tye.

How to Work a SHIP *at* Sea *in the proper* Sea Phraſes, *according to the Beſt* Authors.

The Wind is Fair.

THE Wind is fair, tho' But little ; it comes well, as if it would ſtand, therefore up a Hand and looſe your Fore-top-ſail in the Top, that the *Ship* may ſee we will ſail ; bring Cable to the Capſton, heave up your Anchor, looſe your Fore-ſail in the Brails, put abroad our Colours, looſe the Mizon in the Brails ; is all our Men on Board ? Thoſe that be on Shoar may have a Tow, and be bleſt with a Ruther, for we will ſtay for no Man. Come my Hearts, heave up your Anchor, that we may have a good Prize ; come, who ſays *Amen* ? One and all : Oh brave Hearts ! the Anchor is a Peck ; heave out your Fore-top-ſail, heave out Main-top-ſail, hawl home the Top-ſail-ſheets ; the Anchor is away, let fall your Fore-ſail, hoiſe up your Fore-top-ſail, hoiſe up your Main-top ſail, up and looſe the Main-ſail, and ſet him; looſe Sprit-ſail, and Sprit-ſail-top-ſail: A brave Gale, bring the Fore-tack to the Cat-head, and trim our Sails quartering; hoiſe up our Small-ſails, heave out the Mizon-top-ſail, and ſet him; now we are clear, and the Wind like to ſtand, hoiſe in our Boats before it is too much Sea; aboard Main-tack, aboard Fore-tack, a Lee the Helm handſomely, and bring her to eaſily, that ſhe may not ſtay: Brace the Fore-ſail and Fore-top-ſail to the Maſt, and hawl up the Lee Bowlines, that the *Ship* may not ſtay; paſs Ropes for the Boats on the Lee ſide, and be ready to clap on your Tackle, and hoiſe them in; ſtow them faſt, and let go the Lee Bowline of the Fore-ſail and Weäther Braces, Right your Helm, hawl aft the Fore-ſheet, trim the Sails quartering as before; looſe Sprit-ſail, and hawl aft the Sheets, and hoiſe up the Sprit-ſail-top-ſail, and other ſmall Sails; ſet the Main-ſtay-ſail, and Fore-top-ſail, Stay-ſail and Mizon-ſtay-ſail, and Main-top-ſail, Stay-ſail, and lace on your Bonnets, that we may make the moſt of our way to our

Station; clear your Ropes : Come, get up your Steering Sails, the Lee ſteering Sails of Mainſail and Maintopſail; Foreſail, and Foretopſail only, for they will fit faireſt, and draw moſt.

Thus you have a brave Ship *under all her Sails and Canvas, in her ſwifteſt way of Sailing upon the Sea: Now let us have her right before the Wind.*

Right afore the Wind, and a freſh Gale.

The Wind is vered right aft, take in your Fore and Foretop Sail, Steering Sail, and Foretop Sail, and Main and Maintop Sail, Stay Sails, for they are becalmed by the After Sails, and will only beat out. The Wind blows a freſh Gale, round aft the Main Sheets and Fore Sheets; ſquare your Yards; take in your Main and Maintopſail, Steering Sails, unlace your Bonnets, take in your Main and Foretopgallant Sails: in Sprit Sail, and Mizontop Sail; let go the Sheets; hawl home your Flew Lines, caſt off Topgallant Bowlines. *Thus you have all the ſmall Sails in, and furled when it blows too hard to bear them.*

The

The Wind vereth forward and ſcanteth.

The Wind ſcanteth, vere out ſome of your Fore and Main Sheets, and Sprit-ſail Sheets, and let go your Whether-Braces; top your Sprit-ſail Yard: The Wind ſtill vereth forward, get aboard he Fore and Main Tack; caſt off your Weather Braces: The Sails are in the Wind, hawl off Main and Fore Sheets: The Wind is ſharp, hawl forward the Main Bowline, and Fore Bowline, and awl up the Main Topſail, and Fore Topſail Bowlines, and ſet in your Lee Braces, and keep her as near as ſhe will ie. *Thus have you all the Sails trimm'd harp, and by a Wind.*

The Wind blows Frisking.

The Wind blows hard, ſettle our ore and Main Topſails two Thirds f the Maſt down; it is more Wind, ome hawl down both Topſails cloſe; ome, ſtand by, take in our Topſails; et go the Topſail Bowlines, and Lee races; let go the Lee Sheets, ſet in our Weather Braces, ſpill the Sails, awl home the Topſail Clulines, ſquare the Yard. *Now the Top-ſails are furl'd and you have the Ship in all her Lo Sails or Courſes.*

It bloweth a Storm.

It is like to overblow, take in yo Sprit-ſail, ſtand by to hand the Fore-ſail caſt off the Top-ſail Sheets, Clugarnets, Leechlines, Buntlines; ſtand by th Sheet and Brace; lower the Yard, an furl the Sail, here is like to be very muc Wind; ſee that your Main Hallyards b clear, and all the reſt of your Geer clear and caſt off, (is all clear?) low the Main-yard, hawl down upon yo down-hawl; now the Yard is down hawl up the Clugarnets, Lifts, Leechlines and Buntlines, and furl the Sa faſt, and faſten the Yards that they ma not traverſe and gall. *Thus have yo the Ship a Try under a Mizon.*

A very hollow-grown Sea.

We make Foul Weather, look th Guns be all faſt; come hand the Mizo the Ship lies very broad off; it is better Spooning before the Sea, than Trying or Hulling; go reef the Fore-ſail, an

ſe

t him; hawl aft the Fore-ſheet; the
elm is hard a Weather, mind at Helm
hat is ſaid to you carefully: The Ship
ears bravely, ſteady, ſhe is before it;
elay the Fore-down-hall; it is done:
he Sail is ſplit, go hawl down the
ards, and get the Sail into the Ship,
d unbind all the things clear of it:
arboard, hard up, right your Helm;
ort, Port hard; more Hands, he can-
t put up the Helm; a very fierce
orm, the Sea breaks ſtrange and dan-
erous; ſtand by to hawl off upon the
anyard of the Whip-ſtaff, and help the
an at Helm, and mind what is ſaid to
ou; ſhall we get down our Top-maſt?
o, let all ſtand; ſhe ſcuds before the
ea very well; the Top-maſt being aloft,
e Ship is the wholſomer, and maketh
etter way thro' the Sea, ſeeing we have
ea-room. *Thus you ſee the Ship han-*
led in fair Weather and foul, by and
rge; now let us ſee how we can turn
Windward.

The Storm is over, let us turn to Windward.

The Storm is over, ſet Fore-ſail and
ain-ſail; bring our Ship to; ſet the
Mizon,

Mizon, the Maintop Sail, and the Fore topſail; our Courſe is *E. S. E.* th Wind is at South; get the Starboar Tacks aboard, caſt off your Weathe Braces and Lifts, ſet in the Lee Braces and hawl forward by the Weather Bow lines, and hawl them taught, and be lay them, and hawl over the Mizo Tack to Windward; keep her full, an by as near as ſhe will lye; How win you? *Eaſt*, a quade Wind; no near hard no near, the Wind vereth to th Eaſtward ſtill: How wind you? *N. E* hard no near, the Wind is right in you Teeth; no near ſtill. How wind you *N. W.* by *N.* the Wind will be Nor therly, make ready to go about; w ſhall lye our Courſe the other way, n near; give the Ship way, that ſhe ma ſtay; ready, ready, a Lee the Helm vere out the Fore-ſheet, let go Foreto Bowline; caſt off the Lee Braces your Fore Sail, and Foretop Sail; bra in upon your Weather Braces: Th Fore Sails is a back Stays; hawl Mai Sail, hawl; let riſe the Main Tack, ca off your Larboard Braces; let go Mai Bowline, and Main Topſail Bowline brace about the Yard; hawl forward b

th

the Larboard Bowlines ; get the main Tack cloſe down, in the Cheſs trees ; the Sheet is cloſe aft hawl off all ; hawl, get to Fore tack ; let go Fore-Bowline, and Foretopſail Bowline ; hawl aft the Fore ſheet, hawl taught the main Bowline, the main Topſail Bowline ; ſhift the Mizon Tack, hawl taught Fore Bowline, nd Foretopſail Bowline ; ſet in the Lee Braces fore and aft, keep her as near as he will lye: No near, how wind you? N. *N. E.* Thus, ware no more ; no ear, keep her full ; the Wind is at N. *N. E.* Thus, ware no more ; How wind you? *E. N. E.* The Wind is at N. keep her away her Courſe, E. *S. E.* Caſt off the Lee Braces, and Weather Bowlines, and ſet in your Weather races ; vere out the Main Sheet and ore Sheet, looſe the Spritſail, and pritſail Topſail, and Mizon Topſail, nd Topgallant-Sails ; hoiſe them up ; e Wind veres aft ſtill, let riſe the ore Tack ; the Wind's quartering, hawl t the Fore Sheet, bring it down to the at-head with a Paſs-a-ree ; ſteady in our Weather Braces, the Wind ſtands. *hus you have the Ship as at firſt, ſteer- g under all her Canvas, Quarter-winds.*

ſhe hath been wrought in all manner of Weather, and all ſorts of Wind, therefore we will draw to a Concluſion with a Man of War *in Chaſe, and taking of her Prize.*

The Man of War *in her Station.*

NOW we are all in our Station, and a good Latitude, hand your Top-ſails, and furl your Main-ſail and Fore-ſail, and brail up the Mizon, and let her be at Hull untill Fortune appear within our Horizon. Up aloft to the Top-maſt-head, and look abroad; young Men, look well to the Weſtward if you can ſee any Ship that hath been nipt with the laſt Eaſterly Winds: *A Sail, a Sail.* Where? *Fair by us*; How ſtand She? *To the Eaſtward, and is two Points upon her Weather Bow, and hath her Larboard Tacks aboard:* O then ſhe lies cloſe by a Wind; we ſee her upon the Decks plainly; a good Man to Helm; up young Men, and looſe the Fore-ſail, Main-ſail, and Mizon; get the Larboard Tacks aboard; heave out the Main-top-ſail, and Fore-top-ſail and looſe the Sprit-ſail; keep her as near as ſhe will lye; hawl aft the Sheets, and hawl up your Bowlines taught; do you ſee your Chaſe? *Yea*: How Wind you? *E. N. E.* then the Wind is at *N.* hoiſe up your Top-ſails as high as you can; heave out Sprit ſail, Top-ſail, and Mizon Top-ſail; hawl home the Sheets, and hoiſe them up; a young Man looſe the Main-top-gallant-ſail, and Fore-top-gallant-ſail; hawl home the Sheets, and hoiſe them up; hoiſe up Main-ſtay ſail, and Mizon-ſtay-ſail, and looſe the Main-top-ſail, and Fore-top-ſail, Stay-ſails, and ſet them; it blows a brave Chaſing Gale; the Ship makes brave way thro' the Sea; we raiſe her apace; if ſhe keeps her Courſe, we ſhall be up with her in three Glaſſes; no near, keep the Chaſe open with the Litch of the Fore-ſail: So, thus, keep her thus; come aft all Hands, the Ship will ſteer the better when you ſit all quiet by her ſmall Sails, for ſhe is too much by the Head; the Chaſe is a luſty brave Ship; ſo much the better; ſhe hath the more Goods in her Hold: The Ship hath a great many Guns; it may be ſhe is a Privateer. Port, the Chaſe is about;

come fetch her Wake, and we will be about after her; we Sail far better than ſhe; we have her Wake; a Lee the Helm, veer out Fore-ſheet; every Man ſtand handſomly to his Buſineſs, and mind the Bowlines and Braces, Tacks and Sheets; hawl Main ſail, hawl; let go Main-bowline, Top-bowline, Top-gallant-bowline, hawl off all; hawl, ſhift the Helm; bring her to; hawl the Main-ſheet and Fore-ſheet cloſe aft; ſet in the Lee-braces, hawl taught the Bow-lines; the Chaſe keeps cloſe upon a Wind; keep her open under our Lee. Gunner, See that you have all things in readineſs, and that the Guns be clear, and that nothing peſter our Decks: ——— Down with all Hammocks and Cabbids that may hinder and hurt us. Gunner, is all our Geer ready? Is there ſtore of Cartrages ready fill'd? All manner of Shot at the Main-maſt? is there Rammers: Sponges, Ladles, Priming-Irons and Horns, Linſtocks, Wads and Water, at their ſeveral Quarters ſufficient for them? Be ſure that none of our Guns be cloy'd; and when we are in Fight be ſure to load our Guns with Croſs-

Bar and Longrel; always obſerve to give Fire when the Word is given: See that there be Half-pikes and Javelins in readineſs, and all our Small-ſhot well furniſh'd, and all their Bandaleers fill'd with Powder, and Shot in their Pouches; ſee that our Murtherers and Stock-Fowlers have their Chambers fill'd with good Powder, and Bags of Small-ſhot, to load them, that if we ſhould be laid aboard we might clear our Decks, Star-board; the Chaſe pays away more room; Star-board hard, veer out ſome of the Main-ſheet and Fore-ſheet; caſt off the Larboard-Braces; ſteady, keep her thus, Well ſteer'd, the Chaſe goes away, room, her Sheets are both aft, ſhe is right before the Wind: Starboard hard; let riſe Main-tack, let riſe Fore-tack; hawl aft Main-ſheet, hawl Fore-ſheet; we have a Stern Chaſe, but we ſhall be up with her preſently, for we fetch upon her hand-ſioing; the Chaſe hawls up his Main-ſail, and furls it; ſhe puts aboard her Waſte-cloths; ſhe will fight us, come up young Men and furl our Main-ſail, ſling our Main-yard, with the Chains in the Main-top, ſling our Fore-yard, put abroad our

Waſte-cloths; he will fight us before the Wind; I ſee ſhe is full of Men; it is a hot Ship, but deep and foul; come cheerly my Hearts, it is a Prize worth fighting for; the Chaſes takes in her ſmall Sails, up aloft and take in our Top-gallant Sails, Sprit-ſail, and get the Yard alongſt under the Bow-ſprit; ſhe puts Abroad her Colours; they are White, *French* Colours; no Force; Boy, up and put abroad St. *George*'s Colours in our Main top; ſtept aft a Hand, and put abroad our Antient; call all Hands aloft. *Come up aloft all Hands: They are all up Captain.*

Gentlemen,

WE *are here Imploy'd and Maintain'd by Her Majeſty Queen* ANNE, *and our Country, to do our Endeavours, to keep this Coaſt from Piracy and Robbers, and Her Majeſties Enemies; and it is our Fortune to meet this Ship at this time: Therefore I deſire you in Her Majeſties Name, and for the Sake of our Country, and the Honour of our* Engliſh *Nation, and our Selves, and for every Man,* *to behave himſelf Courageous, like* Engliſhmen; *and not to ſhew the leaſt of a Coward, but to obſerve the Words of Command, and do his utmoſt Endeavour: Into God's Hand we commit our Cauſe, and our ſelves. So every Man to his Quarter, and ſhew his Courage, and God be with you.*

She ſettles her Top ſails; we are within Shot, let all her Guns be looſe in the Tackles, and the Ports be knockt open, that we may be ready to run out our Guns when the Word is given: Up Noiſe of Trumpets, and hail our Prize: She anſwereth again with her Trumpet: Hold faſt Gunner, do not fire till we hail them with our Voices; Port, edge towards him; he fires his Broadſide upon us: What chear my Hearts? Is all well betwixt Decks? *Yea, yea, only ſhe rak'd us through and through*; no Force; it is his turn next; but give no Fire untill we are within Piſtol-ſhot: Port, edge towards him; he plies his Small-ſhot; hold faſt Gunner, Port right your Helm, we will run up his ſide; Starbord a little, give Fire; Gunner, that's well done;

this Broad-ſide hath made their Deck thin, but the Small-ſhot at firſt did gawl us, clap in ſome Caſe-ſhot in the Guns you are now a loading, Brace to the Fore-top-ſail, that we may not ſhoot a-head; he lies broad off to the Southward, to bring his other Broadſide to bear upon us: Starboard hard; get to Larboard Foretack, trim your Top-ſails, run out your Larboard Guns; he Fires his Starboard Broadſide upon us, he pours in his Small-ſhot; Starboard, give not Fire untill he fall off, that the Prize may receive our full Broadſide ſteaddy; Port a little; give Fire Gunner; his Foremaſt is by the Board; this laſt Broadſide hath done great Execution; cheerly my Mates, the Day will be ours; he is ſhot a-head; he bears up before the Wind to ſtop his Leaks; keep her well Steer'd, Port, Port hard, bear up before the Wind, that we may give him our Starboard Broadſide; Gunner, Is there great ſtore of Caſe-ſhot and Longrel in our Guns? *Yea, yea.* Port, make ready to board him; have your Laſhers clear, and able Men with them; edge towards him when you give Fire; bring your Guns to bear amongſt his

Men with the Caſe-ſhot; well Steer'd, we are cloſe on Board; give Fire: Starboard, well done, Gunner; they lye Heads and Points Aboard the Chaſe; Come Aboard him bravely; enter, enter; are you latcht faſt? *Yea, yea*; we will have him before we go here hence; cut up the Decks; ply your Hand-Granadoes, and Stink-pots; he cries out Quarter, *Quarter for our Lives, and we will yield up Ship and Goods*: Good Quarter is granted, provided you will lay down all your Arms; open the Hatches, hawl down all your Sails, and furl them; looſe the Latchings; we will ſheer off our Ship, and hoiſe out our Shallop; if you offer to make any Sail, expect no Quarter for your Lives; go with the Shallop, and ſend Aboard the Captain Lieutenant, and Maſter, and Mates, with as many more as the Shallop will carry.

So we will leave the *Man of War* to his Prize, and to ſecure his Priſoners.

An Explanation of the moſt uſual Sea-Terms.

A.

AFT or *Abaſt*, fromward the Fore-part of the Ship, or towards the Stern, as the *Maſt hangs aſt*; that is, towards the Stern.

How chear ye for and aſt; that is, how fares all your Ship's Company.

Amain, a Word uſed by a Man of War to his Enemy, and ſignifies *Yield*.

Strike Amain; that is, lower your Top-ſails.

The Anchor is a peck; that is, the Anchor is right under the Hawſe, (or Hole) thro' which the Cable belonging to the Anchor runs out.

The Anchor is a Cock-Bell; that is, hangs up and down by the Ship Side.

The Anchor is foul; that is, the Cable is got about the Fluke.

An Awning, a Sail, or the like, ſupported by a Canopy over the Deck, to prevent the ſcorching Heat of the Sun in Hot Climates.

B.

To Bale, is to lade Water out of the Ship's Hold.

F*rench the Ballaſt*, Divide or Separate it.

The Ballaſt ſhoots; that is, runs over from the one ſide to the other.

To bear with the Land, &c. to Sail towards it.

To bear to; that is, to Sail before or with the Wind, into a Harbour or Channel.

A Piece of Ordnance doth come to bear; that is, lyes right with the Mark.

Bear up, a Term uſed in conding the Ship, when they would have her Sail more before the Wind.

Bear up round, put her right before the Wind.

To Belage, to make faſt any running Rope.

To bend a Cable, is to make it faſt.

A Birth, a convenient place to Moor a Ship in.

A Bight, any part of a Rope between the Ends.

The Buge, the breadth of the Place the Ship reſts on when ſhe is aground.

The Ship Bilged; that is, has ſtruck off ſome of her Timber on a Rock or Anchor, and ſprings a Leak.

A Bittack, that whereon the Compaſs ſtands.

A Bitter, a turn of a Cable about the Bits.

The Bits, two ſquare Pieces of Timber, to which the Cables are faſtned when the Ship rides at Anchor.

A *Bonnet*, an addition of another Sail; when they faſten it on they ſay, *Lace on the Bonnet*, and when they take it off, *Shake off the Bonnet*.

A *Boom*, a long Pole uſed to ſpread out the Clew of the Scudding Sail, *&c.*

Board and Board, a Term uſed when two Ships come ſo near as to touch one another.

Board it up, is to turn to Windward.

To *go Aboard*, is to go into a Ship.

To *break Bulk*, is to open the Hold, and take Goods out thence.

C.

To *Chaſe*, is to purſue another Ship, and the Ship ſo purſu'd is call'd the *Chaſe*.

Careening, is bringing a Ship to lye down on one ſide while they Trim and Caulk the other.

Caulking, is driving of Oakham, Spanhair, and the like, into all the Seams of the Ship, to keep out Water.

To *Cond* or *Cun*, is to Direct or Guide; and to *Cun a Ship*, is to Direct the Perſon at Helm how to ſteer her: If the Ship go before the Wind, then he who *Cuns* the Ship uſes theſe Terms to him at Helm, *Starboard*, *Larboard*, *Port*, *Helm a Mid-ſhips.* Starboard, is to put the Helm to the Starboard (or right) ſide, to make the Ship go to the Larboard (or left); for the Ship always ſails contrary to the Helm. In keeping the Ship near the Wind theſe Terms are uſed, *Loof*; *keep your Loof*; *fall not off*; *veer no more*; *keep her to*; *touch the Wind*; *have a care of the Lee Latch.* To make her go *more large*, they ſay, *Eaſe the Helm*; *no near*; *bear up*; To keep her upon *the ſame Point*, they uſe, *Steaddy*, or *as you go*, and the like.

The Ship goes Lasking, *Quartering*, *Veering*, or *Large*, are Terms of the ſame ſignification, *viz.* That ſhe neither goes by a Wind, nor before a Wind, but betwixt both.

The Courſe, is that Point of the Compaſs on which the Ship ſails; alſo the Sails are call'd Courſes.

Cut the Sail; that is, unfurl it, and let it fall down.

D.

Dead Water, the Eddy Water at the Stern of the Ship.

To *Diſembogue*, is to go out of the Mouth of a Gulf.

To diſpert, is to find out the Difference of Diameters betwixt the Breech and Mouth of a Piece of Ordnance.

The Deck is aflush afore and aſt; that is, laid from Stern to Stern, without any Falls or Riſings.

E.

End for End, a Term us'd when a Rope runs all out of the Block, ſo that it is unreved.

F.

A Fathom, a Meaſure containing ſix Feet.

A Fack, is one Circle of any Rope or Cable quoiled up round.

To Hand (or *Furl*) *a Sail*, is to wrap it up cloſe together, and bind it up with little Strings, call'd *Caskets*, faſt to the Yard.

To Fiſh a Maſt or *Yard*, is to faſten a Piece of Timber or Plank to the Maſt or Yard to ſtrengthen it, which Plank is call'd a Fiſh.

To lower or ſtrike the Flag, is to pull it down upon the Cap, and in Fight is a Token of yielding; but otherwiſe of great Reſpect.

To heave out the Flag, is to unwrap it from about the Staff.

Free the Boat or Ship, is to bale or Pump the Water out.

G.

The Ship's Gage, is ſo many Foot as ſhe ſinks in the Water; or) which is as proper) ſo many Foot as ſhe draws.

Weather Gage, is when one Ship has the Wind (or is to Weather) of another.

To Greave the Ship, is to bring her to lye aground, to burn off her old Filth.

The Ship Gripes, that is, turns her Head to the Wind more than ſhe ſhould.

H.

To Hale, is the ſame as to pull.

To Hail a Ship, is to call her Company to know whither they are bound, *&c.* and is done after this manner.

Hoa the Ship! Or only *Hoa*! To which they anſwer *Hoa*. As alſo to Salute another Ship with Trumpets, or the like, is call'd *Hailing*.

Freſh the Hawſe, a Term uſed when that part of the Cable that lyes in the Hawſe is fretted or chaſed, and they would have more Cable veer'd out. When two Cables that come thro' two ſeveral Hawſes, are twiſted, the untwiſting of them is call'd *clearing the Hawſe*: *Thawrt the Hawſe, and rides upon the Hawſe*, are Terms uſed when a Ship lyes *thwart* or *croſs*, or with her Stern juſt *before* another Ship's *Hawſe*. *Note*, that the *Hawſes* are the Holes under the Head of the Ship, through which the Cables run when ſhe lyes at Anchor.

To Hitch, is to make faſt.

The Ship Heels; that is, inclines more to one ſide than the other; as *ſhe heels to Starboard*; that is, turns up her Larboard-ſide to lye down on the Starboard.

The *Hold of a Ship*, is that Part betwixt the Keelſon and the Lower-Deck, where all Goods, Stores and Victuals, do lye. *Rumidge the Hold*, is uſed for removing or clearing the Goods and Things in the Hold. *Stowing the Hold*, is when they take Goods into the Hold.

To Hoyſe, is to hawl or lift up, as, *Hoyſe the Water in*, Hoyſe up the Yards.

Hulling, is when a Ship at Sea takes in her Sails.

L.

The Ship labours; that is, rowls and tumbles much.

Land-fall, is a Term uſed when we expect to ſee Land.

Land locked, is when the Land lies round about us, ſo that no Point is open to the Sea.

Land-to, a Ship is ſaid to lye *Land-to*, when ſhe is at ſo great a Diſtance as only juſt to diſcern Land.

To *Laſh*, is to bind.

To *Launch*, is to put out, as to *Launch a Ship*, is to put her forth off the Dock into the Water; but is ſometimes likewiſe uſed in a Negative Senſe, as when a Yard is hoiſted high enough, they uſually call aloud, *Launch hoe*, that is, hoiſe no more.

To *lay the Land*, is to loſe ſight of it.

The *Lee-ſhore*, is that Shoar againſt which the Wind blows.

Have a care of the Lee-Latch; that is, take heed the Ship go not out too much the Lee-ward.

A Ship lies by the Lee; that is, it has all her Sails lying flat againſt the Maſts and Shrouds.

M.

Mizon-Sail hath ſeveral Words peculiar to it, as, *ſet the Mizon*; that is, fit the Mizon-ſail: *Change the Mizon* that is, bring the Yard to the other ſide of the Maſt : *Speek the Mizon*, that is, put the Yard right up and down the Maſt : *Spell the Mizon*, that is, let go the Sheet, and peek it up.

To Moor a Ship, is to lay out her Anchors in ſuch a manner as is moſt Convenient for her to ride by ſafely.

N.

Neap-tides, are the Tides when the Moon is in the ſecond and laſt Quarter, and they are neither ſo high, nor ſo low, nor ſo ſwift, as the Spring-tides.

A Ship is beneaped, a Term uſed when the Water does not flow high enough to bring a Ship from off the Ground, or out of a Dock, or over a Bar.

O.

Offward, is contrary to the Shoar.

The Ship ſtands for the *Offling* ; that is, ſails from the Shoar into the Sea.

Overſet, is turning over.

P,

To pay a *Seam*, is to lay hot Pitch and Tar on (after Caulking) without Canvas.

To parcel a *Seam*, is (after the Seam is Caulked) to lay over it a narrow piece of Canvas, and pour thereon hot Pitch and Tar.

To ride a *Peek*, is when the Yards are ſo order'd that they ſeem to make St. *Andrew's Croſs*.

The Capſtain purchaſe, apace; that is, draws in the Cable apace.

Q.

Quarter-winds are when the Wind comes in Abaſt the Main-maſt Shrouds, even with the Quarter.

A Quoil, is a Rope or Cable laid up round, one Fack over another, and the Fack is call'd *Quoiling*.

R.

A *Reach*, is the Diſtance between any two Points of Land that lye in the Right Line one from another.

To *Reeve*, is to put a Rope thro' a Block; and to pull a Rope out of a Block is call'd *unreeving the* Rope.

To *Ride*, when a Ship's Anchors hold her faſt, ſo that ſhe does not drive with the Wind or Tide, ſhe is ſaid to *ride at Anchor*.

To *Ride athwart*, is to ride with the Ship's Side to the Tide.

To *Ride betwixt Wind and Tide*, is when the Wind and Tide are contrary, and have equal ſtrength.

To *Ride Hawſe, fall*, is when in a

rough Sea the Water breaks into the Hawſes.

A Road, is any Place near the Land, where Ships may Ride at Anchor; and a Ship riding there is call'd a *Roader*.

Rowſe in; that is, (hawl in) proper only to the Cable or Hawſer, and is us'd when the Cable or Hawſer is ſlack, to make it taught or ſtrait.

S.

To *Sarve a Rope*, is to Wind ſomething about it to keep it from fretting out.

To *Seaze*, is to make faſt or bind.

The Ship Seels; that is, when on a ſudden ſhe lyes down on her Side, and tumbles from one ſide to the other.

The *Ship ſends*; that is, her Head (or Stern) falls deep in the Trough (or Hollow) of the Sea.

To *Settle a Deck*, is to lay it lower.

The *Ship is ſewed*; that is, the Water is gone from her.

The *Ship-Shares*; that is, goes in and out, and not right-forward.

To *Sound*, is to try with a Line, or other thing, how deep the Water is.

The *Ship hath ſepent her Maſts*, that is her Maſts have been broke by foul Weather; but if a Ship loſe her Maſts in Fight, we ſay, *Her Maſts have been ſhot by the Board.*

To *Splice Ropes*, is to untwiſt two Ends of Ropes, and then twiſt them both together, and faſten them, with binding a String about them.

The *Sail is ſplit*; that is blown to pieces.

The *Ship Spooms*; that is, goes right before the Wind without any Sail.

Spring-Tides, are the Tides at New and Full Moon, which flow higheſt, and ebb loweſt, and run ſtrongeſt.

The *Bowſprit Steeves*, that is, ſtands too upright.

T.

Tack about; that is, bring the Ship's Head about to lye the other Way.

Talle aft the Sheets, a Term us'd for hawling aft the Sheets of the Main or Fore-ſail.

A Windward-Tide, when the Tide runs againſt the Wind.

A Leward Tide, when the Wind and Tide go both one Way.

A Tide-Gate, where the Tide runs ſtrong.

To Tide it up, is to go with Tide againſt the Wind, and when the Tide alters, to lye at Anchor till it ſerve again.

It flows Tide and half Tide; that is, it will be high Water ſooner by Three Hours by the Shore than in the *Offlin*.

To *Tow*, is to drag any thing after the *Ship*.

The *Traverſe*, is the Ship's Way.

V.

To *Veer*, is to let out, as *Veer more Rope, veer more Sheet.*

W.

The *Ship is Walt*; that is, wants Ballaſt.

To *Weather a Ship*, is to go to Windward of her.

To *Wind a Ship*, is to bring her Head about.

How *Winds the Ship?* That is, upon what Point of the Compaſs does ſhe lye with her Head.

To *Would*, is to bind Ropes about the Maſt, or the like, to keep on a Fiſh, or ſtrengthen it.

Y.

The *Ship Yaws*; that is, goes in and out, and does not Steer ſteddy.

Younkers, are the Young Fore-maſt Men.

A LIST of the Royal Navy of England *in the Year.* 1705.

Firſt Rates, 7.

	Men	*Guns.*
Royal Ann	780	100
Britannia	754	100
London	706	96
Queen	706	100
Royal Sovereign	800	110
Victory	754	100
Royal William	754	100
Royal George	780	100

Second Rates, 14.

Albermarl	680	96
Aſſociation	640	90
Barfluer	640	90
St. George	688	96
Prince George	640	90
Windſor Caſtle	640	90
Royal Catherine	680	96
S. Michael	582	90
Neptune	640	90
Namure	640	90
Oſſery	640	90
Sandwich	640	90

malborough
prince
princess

Triumph

	Men.	*Guns*
Triumph	640	90
Vanguard	640	90
Blenheim	600	91

Third Rates 45.

L'Aſſurance	446	70
Boyne	446	80
Breda	446	70
Burford	446	70
Bedford	446	70
Captain	446	70
Cornwall	476	80
Chicheſter	476	80
Cambridge	476	80
Cumberland	476	80
Berwick	446	70
La Firme	446	70
Devonſhire	500	80
Dorſetſhire	476	80
Eagle	446	70
Edger	432	72
Eſſex	446	70
Expedition	446	70
Grafton	446	70
Hampton-Court	446	70
Humber	446	80
Ipſwich	446	70
Kent	446	70

Lancaſter

	Men.	Gnus
Lancaſter	476	80
Lenox	446	70
Monmouth	389	66
Norfolk	476	80
Northumberland	440	70
Newark	476	80
Naſſau	446	70
Orford	446	70
Royal Oak	456	74
Rupert	365	80
Renelagh	476	70
Revenge	446	64
Ruſſel	476	80
Reſolution	440	70
Swiftſure	408	70
Shrewsbury	476	80
Sommerſet	476	80
Torbay	476	80
Suffolk	446	70
Warſpight	440	70
Yarmouth	446	70
Defiance	389	64

Fourth Rates 63.

	Men.	Guns
Aſſiſtance	226	48
Angleſea	226	48

Antelope

	Men.	*Guns*
Anthelope	280	54
Briſtol	226	48
Bonadventure	226	48
Burlington	226	48
Blackwall	226	48
Canterbury	346	60
Centurian	226	48
Chatham	226	48
Crown	280	54
Cheſter	226	48
Deptford	226	48
Dover	226	48
Dragon	216	46
Dunkirk	365	64
Dreadnought	346	64
Dartſmouth	226	48
Exeter	346	60
Faulkland	280	54
Greenwich	276	54
Glouceſter	346	60
Guernſey	226	48
Hazardous	280	54
Hampſhire	226	48
Jerſey	280	54
Kingſton	346	60
Kingfiſher	216	46
Leopard	280	54
Litchfield	226	48

Mary

	Men.	*Guns*
Mary	365	64
MedWay	346	60
Monk	365	64
Montague	346	62
Moderate	280	54
Nottingham	365	64
Norwich	226	48
Nonſuch	226	48
Newcaſtle	274	54
Oxford	280	54
Panthar	280	54
Pendennis	226	48
Plimouth	365	64
Pembrook	346	60
Portland	226	48
Rocheſter	226	48
Romney	226	48
Ruby	226	48
Reſerve	280	54
Swallow	280	54
Severn	226	48
Southampton	226	48
Sunderland	346	60
Tilbury	226	48
Tryton	280	54
Tyger	230	48
Warwick	226	48
Weymouth	226	48

	Men.	Guns
Windſor	346	60
Wincheſter	226	48
Worceſter	280	54
Woolwick	280	64
Arrogant	280	54

Fifth Rates 40.

Adventure	190	44
Arundel	135	32
Betty	135	32
Bedford Gally	135	32
Bridgewater	135	32
Charles Gally	135	32
Dolphin	115	26
Experiment	135	32
Faulkſton	190	42
Feverſham	135	32
Faulcon	145	32
Grayhound	190	42
Fowey	145	32
Goſpert	135	32
Guarland	190	42
Haſtings	135	32
Hector	190	42
Kingſale	135	32
Lark	190	42
Litch. Prize	135	32

	Men.	Gnus
Looe	135	32
Loweſtoff	135	32
Lyme	135	32
Lynn	135	32
Mary Gally	135	32
Mermaid	135	32
Milford	135	32
Poole	135	32
Roebuck	190	42
Rye	135	32
Sauldadoes Prize	180	40
Sorlings	135	32
Scarborough	135	32
Shearneſs	135	32
Speedwel	125	28
Shoreham	135	32
Strombolo	135	32
Tartar	145	32
Winchelſea	135	32
Swallow Prize	135	32

Sixth Rates 24.

Advice Prize	115	24
Chatham Prize	110	24
Dunwich	110	24
Deal Caſtle	110	24
Flamborough	110	24

	Men.	*Guns*
Faulklands Prize	110	24
Lizard	110	24
Maidſton	110	24
Margaret	110	24
Newport	110	24
Nightingale	115	24
Notingham Prize	110	24
Medways Prize	110	24
Penzance	110	24
Perigreen Gally	50	20
Poſtilian Prize	115	24
Queenborough	110	24
Rocheſter Prize	110	24
Solebay	110	24
Sun Prize	115	24
Squirril	115	24
Swan	110	24
Triton Prize	110	24
Worceſter Pr.	110	24

Fire Ships 10.

Firebrand	45	8
Griffin	45	8
Hawk	45	8
Hunter	45	8
Lightning	45	8
Phœnix	45	8

Terrible

	Men.	Guns
Terrible	45	8
Verſuvious	45	8
Vulcan	45	8
Vulture	45	8

Yatches, 15.

Charlot	30	8
Cleveland	30	8
Fubbs	30	8
Henrietta	30	8
Iſle of Wight	5	4
Iſabella	30	8
Jemmy	2	2
Catherine	30	8
Mary	30	8
Portſmouth	30	8
Queenborough	4	4
Soeſdyke	30	8
St. Loe	2	4
Squirril	4	4
William and Mary	40	8

Bomb-Veſſels, 9.

Baſilisk	30	4
Blaſt	30	4
Carcaſs	30	4
Commet	30	4

	Men.	*Guns*
Furnance	30	4
Grannada	30	4
Salamaner	30	4
Star	35	8
Terrour	30	4

Store-Ships, 2.

Suffolk Hagboat	80	10
St. Joſeph	45	8

Sloopes, 9.

St. Antonio	20	15
Bonetta	35	2
Ferret	35	2
Hound	35	2
Merlin	35	2
Swift	35	2
Tyrrel	35	2
Wolfe	35	2
Weaſel	35	4

Advice-Boats, 3.

Expreſs	40	4
Eagle	54	10
Paramore Pk.	50	10

Brigantines

Brigantines, 6.

	Men.	Guns
Dilligence	35	6
Spye	35	8
Flye	35	6
Diſcovery	35	6
Diſpatch	35	6

Hoſpital-Ships, 4.

Princeſs Anne	80	10
Jefferies	60	10
Smirna Factor	45	8
Mathews Friget	45	6

Hulks 14.

Content	40	
Chatham	7	
St. David	40	
Exeter	3	
St. George	29	
Joſiah	80	30
Leopard	30	
Loyalty	40	
St. Lewis	50	
Medway	30	

	Men.
Plymouth	29
Succeſs	5
Thunderbolt	4
French Ruby	66

Smacks 9.

Flem. I. Boat	2
Royal Eſcape	10
St. George	10
Hopewell	10

Ketches 2.

Providence	4
Succeſs	4

Hoyes, 9.

Depthford Tr.	7
Endeavour	4
Hamouſe Tr.	5
Lion Hoy	4
Plymouth	5
Supply	7
Unity firſt	4
Unity ſecond	7
Tranſporter	—

Ships

Ships Victualling Ports.

In England, *London*, *Chatham*, *Dover*, *Portſmouth*, *Plimouth*, *Harwich*, *Hull* and *Newcaſtle*.

In Ireland, *King-ſale* and *Dublin*.

The Principal Commanders *of the* Sea Forces.

His Royal Highneſs, Prince *George* of *Denmark*, Lord High Admiral of *England* and *Ireland*, and the Dominions and Iſlands of the ſaid Kingdom, *&c.* His Salary 7000 l. *per Annum*.

Council to his R. H. as Lord High-Admiral, Sir *George Rook*, Kt. Sir *David Mitchel*, Kt. *Geo. Churchil*, and *Rich. Hill*, Eſquires.

His Secretaries, *George Clark*, *Joſiah Burchet*, Eſquires.

Rules to be obſerved in the Payment of the NAVY.

FLag-Officers, Captains, Lieutenants, Maſters and Chirurgeons, ſhall receive double Pay in time of War.

Flag-Officers, Captains of *Firſt*, *Second*, *Third*, *Fourth* and *Fifth* Rates, and Fireſhips, ſhall receive ſingle Pay in time of Peace.

Lieutenants of *Firſt*, *Second* and *Third* Rates, that have ſerved a Year, or in one Engagement, ſhall receive ſingle Pay in time of Peace.

Maſters of *Firſt*, *Second* and *Third* Rates, that have ſerved a Year, or in one Engagement, ſhall receive ſingle Pay in time of Peace.

Theſe Officers are to attend Her Majeſties *Service*, and their *Salary* will be paid quarterly, otherwiſe they loſe the Benefit thereof.

An Exact Table of each Officers Pay by Month, in each Rate of Ship belonging to the Royal Navy of England, *from a Captain to an Armourer.*

Officers.	1ſt. Rate.			2d. Rate.		
Captain *per* Day	1	10	0	1	4	0
Lieutenant *per* Day	0	6	0	0	6	0
Maſter *per* Month	14	6	0	12	12	0
Boatſwain	4	0	0	3	10	0
Gunner	4	0	0	3	10	0
Carpenrer	4	0	0	3	10	0
Purſer	4	0	0	3	10	0
Chirurgeon	5	0	0	5	0	0
Maſt. Mate & Pilot	3	6	0	3	0	0
Quarter-Maſter	1	15	0	1	15	0
Quarter-Ma. Mate	1	10	0	1	10	0
Boatſwain-Mate	1	15	0	1	15	0
Yeomen of Sheets	1	12	0	1	10	0
Gunner's Mate	1	15	0	1	15	0
Quarter Gunner	1	6	0	1	6	0
Carpenter's-Mate	2	0	0	2	0	0
Ordinary or Crew	1	6	0	1	6	0
Chirurgeon's-Mate	1	10	0	1	10	0
Steward	1	5	0	1	5	0
Steward's-Mate	1	0	8	1	0	0
Midſhip-men	2	5	0	2	0	0
Corporal	1	15	0	1	1[illegible]	0
Coxſwain	1	12	0	1	10	0
Trumpeter	2	10	0	1	8	0
Cook	1	5	0	1	5	0
Armourer	1	5	0	1	5	0

3d Rate.	4th Rate.	5th Rate.	6th Rate.
1 0 0	0 15 0	0 12 0	0 10 0
0 5 0	0 5 0	——	——
9 7 4	8 12 4	7 15 0	*C. is Maſt.*
3 0 0	2 10 0	2 5 0	2 0 0
3 0 0	2 10 0	2 5 0	2 0 0
3 0 0	2 10 0	2 5 0	2 0 0
3 0 0	2 10 0	2 5 0	2 0 0
5 0 0	5 0 0	5 0 0	5 0 0
2 16 2	2 7 10	2 2 0	2 2 0
1 12 0	1 10 0	1 8 0	1 6 0
1 8 0	1 8 0	1 6 0	1 5 0
1 12 0	1 10 0	1 8 0	1 6 0
1 8 0	1 8 0	——	——
1 12 0	1 10 0	1 8 0	1 6 0
1 5 0	1 5 0	1 5 0	1 5 0
1 16 0	1 14 0	1 12 0	1 10 0
1 5 0	1 5 0	1 5 0	1 5 0
1 10 0	1 10 0	1 10 0	1 10 0
1 5 0	1 3 4	1 0 8	1 0 0
1 0 8	1 0 8	——	——
1 17 6	1 13 9	1 10 0	1 10 0
1 10 0	1 10 0	1 8 0	1 5 0
1 8 0	1 8 0	1 6 0	——
1 5 0	1 5 0	1 5 0	1 4 0
1 5 0	1 5 0	1 5 0	1 4 0
1 5 0	1 5 0	——	——

An Exact Pay-table for Maſters, Gunners, Carpenters, Boatſwains, Purſers and Chirurgeons, from One Day to Six, and for all Rates of Ships belonging to the Royal Navy.

Note, *That the Chirugeons has alike Pay in all Ships.*

Firſt Rate.

1 day	2 days.	3 days.	4 days.
0 10 0	1 0 0	1 10 0	2 0 0
0 2 10	0 5 8	0 8 6	0 11 4
0 3 6	0 7 2	0 10 8	0 14 4

Second Rate.

0 9 0	0 18 0	1 7 0	1 16 0
0 2 6	0 5 0	0 7 6	0 10 0

Yeoman of Powder Cooks-Mate Coxſwain's-Mate Swaber Cooper Able Seamen	of each Rate hath 1 *l.* 4 *s. per* Month.
Ordinary Seamen Shifter Barber	of each Rate hath 19 *s. per* Month.

Firſt Rate.

5 days.	6 days.	
2 10 0	3 0 0	Maſter
		Gunner
		Carpenter
0 14 2	0 17 0	Boatſwain
		Purſer
0 17 10	1 1 6	Chirurgeon

A Second Rate.

2 5 0	2 14 0	Maſter
		Gunner
		Carpenter
0 12 6	0 15 0	Boatſwain
		Purſer

Third Rate.

1 day.	2 days.	3 days.	4 days.
0 6 8	0 13 4	1 0	1 6 8
0 2 0	0 4 3	0 6 4	0 8 6

Fourth Rate.

0 6 0	0 12 2	0 18 4	1 4 6
0 1 9	0 3 6	0 5 4	0 7 1

Fifth Rate.

0 5 8	0 11 4	0 4 0	1 2 10
0 1 8	0 3 2	0 4 9	0 6 5

Sixth Rate.

0 5 6	0 11 0	0 16 6	1 2 0
0 1 5	0 2 10	0 4 3	0 5 8

Third Rate.

5 days.			6 days.			
1	13	4	2	0	0	Maſter
						Gunner
						Carpenter
0	10	8	0	12	9	Boatſwain
						Purſer

Fourth Rate.

8	10	8	1	16	10	Maſter
						Gunner
0	8	1	0	10	8	Carpenter
						Boatſwain
						Purſer

Fifth Rate.

1	8	6	1	14	2	Maſter
						Gunner
						Carpenter
0	8	0	0	9	7	Boatſwain
						Purſer

Sixth Rate.

1	7	8	1	13	4	Maſter
						Gunner
0	7	1	0	8	6	Carpenter
						Boatſwain
						Purſer

First Rate.

1 week.	2 weeks.	3 weeks.	1 month.
3 10 0	7 0 0	10 10 0	14 0 0
1 0 0	2 0 0	3 0 0	4 0 0
1 5 0	2 10 0	3 15 0	5 0 0
Second Rate.			
3 3 0	6 6 0	9 9 0	12 12 0
0 17 6	1 15 0	2 12 6	3 10 0
Third Rate.			
2 6 10	4 13 8	7 0 6	9 7 4
0 15 0	1 10 0	2 5 0	3 0 0
Fourth Rate.			
2 3 1	4 6 2	6 9 3	8 12 4
0 12 6	1 5 0	1 17 6	2 10 0

First Rate.

2 mon.	3 mon.	6 mon.	
28 0 0	42 0 0	84 0 0	Maſter
			Gunner
			Carpenter
8 0 0	12 0 0	24 0 0	Boatſwain
			Purſer
10 0 0	15 0 0	20 0 0	Chirurgeon

Second Rate.

2 mon.	3 mon.	6 mon.	
25 4 0	37 16 0	75 12 0	Maſter
			Gunner
			Carpent.
7 0 0	10 10 0	21 0 0	Boatſw.
			Purſer

Third Rate.

2 mon.	3 mon.	6 mon.	
18 14 8	28 2 0	56 4 0	Maſter
			Gunner
			Carpenter
6 0 0	9 0 0	18 0 0	Boatſwain
			Purſer

Fourth Rate.

2 mon.	3 mon.	6 mon.	
17 4 8	25 17 0	51 14 0	Maſter
			Gunner
			Carpent.
5 0 0	7 10 0	15 0 0	Boatſw.
			Purſer

Fifth

Fifth Rate.

1 week.	2 weeks.	3 weeks.	1 month.
1 19 2	3 17 6	5 16 3	7 15 0
0 11 3	1 2 6	1 13 9	2 5 0

Sixth Rate.

1 18 9	3 17 6	5 16 3	7 15 0
0 10 0	1 2 6	1 13 9	2 5 0

Fifth Rate.

2 mon.			3 mon.			6 mon.			
15	10	0	23	5	0	46	10	0	Maſter Gunner Carpenter Boatſwain Purſer
4	10	0	6	15	0	13	10		

Sixth Rate.

15	10	0	23	5	0	46	10	0	Maſter Gunner Carpenter Boatſwain Purſer
4	10	0	6	15	0	13	10	0	

A Table of Lower Degrees of Pay, from 3 l. 17 s. 6 d. to 19 Shill. per *Month; from 1 Day, to 6 Days, and ſo to 6 Months, very uſeful for all Seamen, whether they belong to the Navy, or Merchant-men.*

1 Day			2 Days			3 Days			4 Days			5 Days			6 Days		
0	2	9	0	5	6	0	8	3	0	11	0	0	13	10	0	16	7
0	2	6	0	5	0	0	7	6	0	10	0	0	12	6	0	15	0
0	2	4	0	4	8	0	7	0	0	9	5	0	11	9	0	14	1
0	2	2	0	4	4	0	6	6	0	8	9	0	10	11	0	13	1
0	2	1	0	4	3	0	6	5	0	8	6	0	10	8	0	12	10
0	2	0	0	4	0	0	6	0	0	8	0	0	10	0	0	12	0
0	1	9	0	3	6	0	5	4	0	7	1	0	8	11	0	10	8
0	1	8	0	3	5	0	5	1	0	6	10	0	8	6	0	10	3
0	1	7	0	3	2	0	4	9	0	6	5	0	8	0	0	9	7
0	1	6	0	3	0	0	4	6	0	6	0	0	7	6	0	9	0
0	1	5	0	2	10	0	4	3	0	5	8	0	7	1	0	8	6
0	1	4	0	2	8	0	4	0	0	5	4	0	6	8	0	8	0
0	1	3	0	2	7	0	3	11	0	5	2	0	6	6	0	7	10
0	1	3	0	2	6	0	3	9	0	5	0	0	6	3	0	7	6
0	1	2	0	2	5	0	3	7	0	4	10	0	6	0	0	7	3
0	1	2	0	2	4	0	3	7	0	4	9	0	6	0	0	7	2
0	1	1	0	2	3	0	3	5	0	4	6	0	5	8	0	6	10
0	1	0	0	2	1	0	3	2	0	4	2	0	5	4	0	6	5
0	1	0	0	2	0	0	3	0	0	4	0	0	5	0	0	6	0
0	0	11	0	1	10	0	2	10	0	3	9	0	4	9	0	5	8
0	0	11	0	1	10	0	2	9	0	3	8	0	4	7	0	5	6
0	0	10	0	1	9	0	2	8	0	3	6	0	4	5	0	5	4
0	0	10	0	1	8	0	2	6	0	3	5	0	4	3	0	5	1
0	0	10	0	1	8	0	2	6	0	3	4	0	4	2	0	5	0
0	0	8	0	1	5	0	2	2	0	2	11	0	3	8	0	4	5
0	0	8	0	1	5	0	2	1	0	2	10	0	3	6	0	4	3
0	0	8	0	1	4	0	2	0	0	2	8	0	3	5	0	4	1

1 Week

1 week		2 week			3 week			1 Mon.			2M n.			3 Mon.			6 Mon
19s.	4	1	18	9	2	18	1	3	17	6	7	15	0	11	12	6	23 5
17	6	1	15	0	2	12	6	3	10	0	7	0	0	10	10	0	21 0
16	6	1	13	0	2	9	6	3	6	0	6	12	0	9	18	0	19 16
15	4	1	10	8	2	6	0	3	1	5	6	2	10	9	4	3	18 8
15	0	1	10	0	2	5	0	3	0	0	6	0	0	9	0	0	18 0
14	0	1	8	1	2	2	1	2	16	2	5	12	4	8	8	6	16 17
12	6	1	5	0	1	17	6	2	10	0	5	0	0	7	10	0	15 0
11	11	1	3	11	1	15	10	2	7	10	4	15	8	7	3	6	14 7
11	3	1	2	6	1	13	9	2	5	0	4	10	0	6	15	0	13 10
10	6	1	1	0	1	11	6	2	2	0	4	4	0	6	6	0	12 12
10	0	1	0	0	1	10	0	2	0	0	4	0	0	6	0	0	12 0
9	4	0	18	9	1	8	1	1	17	6	3	15	0	5	12	6	11 5
9	2	0	18	4	1	7	6	1	16	8	3	13	4	5	10	0	11 0
8	9	0	17	6	1	6	3	1	15	0	3	10	0	5	5	0	10 10
8	6	0	17	0	1	5	6	1	14	0	3	8	0	5	2	0	10 4
8	5	0	16	0	1	5	3	1	13	9	3	7	6	5	1	0	10
8	0	0	16	0	1	4	0	1	12	0	3	4	0	4	16	0	9 12
7	0	0	15	0	1	2	6	1	10	0	3	0	0	4	10	0	9 0
7	0	0	14	0	1	1	0	1	8	0	2	16	0	4	4	0	8 8
6	8	0	13	4	1	0	0	1	6	8	2	13	4	4	0	0	8 0
6	6	0	13	0	0	19	6	1	6	0	2	12	0	3	18	0	7 16
6	3	0	12	6	0	18	9	1	5	0	2	10	0	3	15	0	7 10
6	0	0	12	0	0	18	0	1	4	0	2	8	0	3	12	0	7 4
5	10	0	11	8	0	17	6	1	3	4	2	6	8	3	10	0	7 0
5	2	0	10	4	0	15	6	1	0	8	2	1	4	3	2	0	6 4
5	0	0	10	0	0	15	0	1	0	0	2	0	0	3	0	0	6 0
4	9	0	9	6	0	14	3	1	19	0	1	18	0	2	17	0	5 14

The Uſe of the foregoing Tables.

Firſt, Suppoſe you would know a Gunner of a *Third Rate*'s Pay for three Months, 2 Weeks, and 4 Days.

You muſt look in the Table of Maſters, Gunners, *&c.* for the place of *Third Rates*, and under 3 Months in the head of the Page, and over againſt *Gunner*, *Carpenter*, *Boatſwain* and *Purſer*, (for their Pays are all alike) you will find 9 *l.* which is his Pay for 3 Months: Then look in the Table of Weeks, which is a little to the Left-hand, and under 2 Weeks you will find 1 *l.* 10 *s.* and under 4 Days in the Table of Days you will find 8 *s.* 6 *d.* which being added together, makes 10 *l.* 18 *s.* which is the Anſwer of your Queſtion.

Secondly, If you deſire to know what Pay is due to a Mid-ſhip-man, for 8 Months, 3 Weeks, and 4 Days.

You muſt look in the Monthly Pay-table of Officers, for Mid-ſhip-men, and over againſt it you will find (under what Rate he belongs) how much he has a Month; as ſuppoſe in a *Third Rate* he has 1 *l.* 17 *s.* 6 *d.* *per* Month, look in the

Table of Months, and caſt your Eye downward in the Column of one Month, till you come to 1 *l.* 17 *s.* 6 *d.* then oppoſite to that in the ſame Line to the Right-hand, and under 6 Months, you'll find 11 *l.* 5 *s.* which is his Pay for 6 Months; then look under 2 Months, and in the ſame Line you'll find 13 *l.* 15 *s.* then look to the Left-hand in the ſame Line, and under 3 Weeks you will find 1 *l.* 8 *s.* 1 *d.* then look ſtill in the ſame Line, and unber 4 Days, and you will find 5 *s.* 4 *d.* which being added together, amounts to 16 *l.* 3 *s.* 5 *d.* which is the Pay due to him for the time ſuppoſed.

At the Court at White-Hall, *the* 15*th of* Decemb. 1692.

UPon reading this Day at the Board a Report from the Right Honourable the Commiſſioners for executing the Office of Lord High Admiral of *England*, ſetting forth, That for the

Encouragement of the Commanders, Officers and Seamen, ſerving in their Majeſties Ships, Their Majeſties will be graciouſly pleaſed of Their Royal Bounty to grant unto them, for their own Uſe and Benefit, all Privateers of the Enemy which ſhall be taken by them; together with their Tackle, Apparel, Furniture and Lading, the ſame to be by them diſpoſed of for their beſt Advantage, and the Proceed thereof diſtributed to the Commanders, Officers and Seamen, on Board Their Majeſties Ships, which ſhall take the ſaid Privateers, according to the Proportions following, *viz.*

To the Captain, two eight Parts.

To the Lieutenant and Maſter, one eighth Part.

To the Boatſwain, Gunner, Purſer, Carpenter, Maſter's Mates, Chirurgeon and Chaplain, eight one Part to be equally divided.

To Midſhip-men, Carpenter's-Mates, Boatſwain's-Mates, Gunner's-Mates, Corporal, Yeomen of the Sheets, Coxſwain, Quarter-Maſters, Quarter-Maſter's-Mates, Chirurgeon's Mates, and

Yeomen of the Powder-Room, one eighth Part to be equally divided.

Trumpeter, Quarter Gunner, Carpenter's-Crew. Steward, Cook, Armourer, Steward's-Mates, Cook's-Mates, Gunſmith, Cooper, Swabber, Ordinary Trumpet, Barber, Able Seamen, and Ordinary Seamen, two eighth Parts to be equally divided.

And that the Widow or neareſt Relation (if no Widow left) of any Perſon ſlain in taking any ſuch Privateers, ſhall be allowed the like Share as the Perſon ſlain ought to have had, according to the Quality in which he ſerved. Dated at the *Admiralty Office* the 15th Day of *December* 1692.

His Majeſty in Council was graciouſly pleaſed to Approve of the ſaid Report, *and to Order as is hereby Order'd, That the ſaid Commiſſioners of the Admiralty do give all neceſſary Directions and Orders therein accordingly.*

The Third Part of any Prize belonging to the Ship's Company, ſubdivided into Shares, according to the Cuſtom of the Navy, *thus:*

The Captain, Ten Shares: the Lieutenant and Maſter, Eight Shares each.

The Mates, Chirurgeon, Gunner, Boatſwain and Carpenter, Six Shares each.

The Trumpeter, Quarter-Maſters, Cooper, Chirurgeon's Mate, Gunner's Mate, and Carpenter's Mate, Five Shares each.

The Corporal, Quarter-Gunner, Steward, Cook and Coxſwain, Four Shares each.

The Fore-maſt or Mid-maſt Men according to their Deſerts; ſome Three, and ſome Two and a half; and the Boys a ſingle Share. The Captain hath power to take a whole or half ſhare from one, and give to another, as he finds they deſerve.

A Guide to the Purſer and Stewards belonging to the Navy:

Wherein is ſet down the Queen's *Allowance of Victuals for every Day in the Week; with Directions how to make up his Accounts, and what Methods to uſe; ſo that he may diſcharge his Duty to the* Queen, *as well as to the Seamen.*

To caſt up a Proportian of Sea Victuals for 40 Men 112 Days.

40 Men.
112 Days.

80
40
40
$\frac{1}{7}$) 4480

640
3

$\frac{1}{8}$) 1920
240
2

480

Pounds of Bread and Gallons of Beer; which divide by 7, gives the number of 4 Pound Pieces of Beef, and 2 Pound Pieces of Pork, and Quarts of Peaſe, which multiply'd by 3, and divided by 8, gives 240 ſiz'd Fiſh (or Gallons of Oatmeal) and Pounds of Butter, which multiply'd by 2, gives Pounds of Cheeſe.

An Account of what Victuals one Man is allowed for every Day in one Week.

	S.	M.	T.	W.	T.	F.	S.	fot.
Biſquet, Pounds	1	1	1	1	1	1	1	7
Beer, Gallons	1	1	1	1	1	1	1	7
Beef, Pounds			2				2	4
Pork, Pounds	1				1			2
Peaſe, $\frac{1}{2}$ Pints	$\frac{1}{2}$	$\frac{1}{2}$		$\frac{1}{2}$	$\frac{1}{2}$			2
Fiſh, ſiz'd		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{3}{8}$
Butter, Ounces		2		2		2		6
Cheeſe, Ounces		4		4		4		12

Note, *That for* Fiſh *they give* Oatmeal.

Multiply the Number of Men by the Number of Days you are to Victual, and that gives the Number of Pounds of Bread or Bisket. Then for Beer, divide by 60 the number of Gallons in a Hogſhead, and that divided by 4, gives the number of Tuns: As for *Example.*

112 Days.
40 Men.

60) 4480 (74 Hogſh. and 40 Gallons, which divide by 4, gives

$\frac{1}{4}$ 74 18 Tuns, and 2 Hogſheads, and 40 Gallons.

Then for your 4480 Pounds of Bread, divide by 7 Four Pound pieces of Beef, and 2 Pound pieces of Pork, and Quarts of Peaſe $(\frac{1}{7})$ 4480 (*640*.

Then for your *640* Quarts of Peaſe, divide by $\frac{7}{4}$ makes Gallons, and your Gallons divided by 8, makes Buſhels.

Then for your *640* Quarts of Peaſe, multiply by 3, and divide by 8, and it gives you the ſiz'd Fiſh, or in lieu thereof, as many Gallons of Oatmeal.

Then for 240 ſiz'd Fiſh, there is alſo as many Pounds of Butter.

Then for 240 Pounds of Butter, twice ſo many Pounds of Cheeſe.

Upon the paſſing your Accompt, you will be allow'd a Tun of Cask *per* Month for Water, and 3 Bisket Baggs for a 4th Rate; for Iron Hoops ſmall Allowance.

Have a care to deduct your $\frac{1}{8}$ Part as well of Beer, Peaſe and Oatmeal, by Meaſure, as of Butter, Cheeſe and Bread by Weight, to make good your waſte, for none dare diſpute it without detriment.

If you have any Proviſions to ſpare, or your Eights in *England*, the Victualler pays, *viz.*

For Bread ——— 1 *d. per* Pound.
Beer ——— 28 *ſhill. per* Tun.
Beef ——— 8 *d. per* Piece.
Pork ——— 5 *d. per* Piece.
Peaſe ——— 2 *s.* 6 *d. per* Buſhel.
Oatmeal ——— 4 *s. per* Buſhel.
Butter ——— 3 *d.* $\frac{1}{2}$ *per* Pound.
Cheeſe ——— 1 *d. far. per* Pound.

But what they do to the Southward I don't know.

If your Men have any Proviſions to ſpare that is due, be ſure not to refuſe the buying of it at ſuch Rates as Money is to be got by it; as Bread at 5 *s.* 6 *d. per Cent.* 112 *l.* to the 100; but have a care to reduce it to 16 Ounces to the Pound. Beef and Pork at 4 *d. per* Piece, which will turn to Account. If you ſpend Oatmeal, be ſure not to buy your Men out of it, for that will be loſs to you; but if you are to pay firſt Money, you will receive 9 *d. per* Month, which you may buy for 6 *d.* if you let them have Money beforehand.

After you have Victualled and Indented, you muſt ſet it down in your Book for that purpoſe, and keep your Debtors part together, that you may give a due Charge to the Surveyor of Victualling, when you come to paſs your Account.

Proviſions you will receive ſometimes, which muſt always be charged to your Debtors part, as alſo Proviſions borrowed from other Ships.

Victualling other Ships Men muſt be kept an account of, with their true Names, and time of beginning and ending, and by what Order Victuall'd; ſo that you may diſcount it with the Purſer of that Ship, either by Victuals back, or by Receipts, or Money paid you for it.

At all times be careful, and ſtave no more Casks than Neceſſity requires; for the Queen pays 5 *Shill. per* Tun for Cooperage, beſides what you do your ſelf; for you will rarely find the number of Staves in any Cask, which you muſt deliver to Tunnage; namely, 28 Butt-Staves to a Butt, 26 to a Punchion, 24 to a Hoſhead, and 22 to a Barrel. And note, That two Pieces of ſingle heading makes a Stave, as well Cantle-pieces as Middle-pieces.

Men will urge you to ſcuttle Beef, Pork, Peaſe, Oatmeal, if you'll be rul'd by them; but you are ſure to pay for all your ſcuttled 4*d.* *per* Butt, 3 *d.* $\frac{1}{2}$ *per* Punchion, 3 *d.* *per* Hogſhead, and 2 *d.* $\frac{1}{2}$ *per* Barrel Staves a piece, which avoid as often as you can.

Keep your Cheque-Book going, and let not a Muſter be made without your ſelf or Steward, to prevent your Victualling of Men in your own wrong, when prickt by the Clerk of the Cheque; for do not fancy that theſe ſtand for a Cypher, for they will out you of all your Proviſions.

You are allow'd 6 *d.* a Man *per* Month Neceſſary-Money, with which you are to buy Wood, Candles, and Turnery-ware.

Your Lading Charges is 2 *s.* *per menſem.* Your Adds Money 3 *s.* 4 *d.* *per* Month. You are allow'd 4 *d.* *per* Tun of Drawage of the whole Proviſions of Beer, all which the Victualler will pay you when you Indent.

You are allow'd 8 *d.* *per* Man a Month Extra-neceſſary Money, which you are o receive when you Indent.

If you Indent for a proportion of Men under *60*, then you are allow'd *9 d.* a Man a Month, but no Adds-money.

Your under Gauge is according to what your Cask holds, *viz.*

A Butt	108 Gallons.
A Punchion	72
A Hogſhead	54
A Barrel	*36*

According to the Gauge, and what is leſs than there is under Gauge, and what is wanting of your Gauge, the Victualler will allow for it after the Rate of *30 s.* *per* Tun, and ſometimes 28 *s.*

Take the Account of the under Gauge as follows; admit I was to take in 40 Butts or more, ſet down the Number gradually, 1, 2, 3, 4, *&c.* and ſo to 40, and ſet the Mark on the Head againſt the Number, then add up all together, and divide the Total by 216, and the Quotient is Tuns.

If you take in *Cheſhire*-Cheeſe for *Suffolk*, you muſt allow 3 pounds of *Suffolk* for 2 pound of *Cheſhire*.

If you take in Flower and Currants for Beef, and for Pork and Peaſe, you muſt have 3 Pounds of Flower, and half a Pound of Currants for a piece of Beef, and piece of Pork and Peaſe.

All this you deliver by Weight or Meaſure; you muſt keep back the 8th part for Waſte; you muſt take care that the weight be made after the rate of 14 Ounces to the Pound, and that Meaſure is 7 Pints to the Gallon.

If at any time you deliver to any other Ship any proportion of Cask Bags, or Iron-Hoops, take a Receipt for the ſame, ſpecifying the Particulars in words at length; and deliver none without an Order from your Commander, and take a Receipt for the ſame.

If you go into any Harbour in the time of your Voyage, and enter into Petty-warrant, you are to ſpecifie in your Sea-book the ending of Sea Victuals, and the beginning of Petty-warrant; and the ending of the ſame, and beginning of Sea-Victuals.

In Petty-warrant you are allow'd 12 *d.* a Man *per* Month Neceſſary Money, but not Adds Money, Lading Charges, and Drawage.

When you receive any Warrants from the Clerk of the Cheque for Victualling, be ſure (before you give it the Victualler) take a Copy of them, that you may, know by caſting up your Warrants, what they amount to.

You muſt be ſure to return to your Cask and Bisket-bags, for they will make you pay 20 *s. per* Tun for Cask, and 12 *d.* for each Bag.

When you caſt your Petty-warrant up you are not to caſt after the manner you caſt your Sea-Victuals; but you muſt take a particular Account how many Fiſh Days, and how many Fleſh Days, there are in that Warrant; ſo many pieces of Pork, Quarts of Peaſe; Fleſh-days, half a piece of Pork, half a piece of Beef, one 8th part of ſiz'd Fiſh, two Ounces of Butter, and a quarter of a Pound of Cheeſe, Bread, and Beer, as above.

In petty Warrant you have 2 pound Loaves and each Man to have the half of it a Day; when you make up your Petty-warrant Account, make your ſelf Debtor and Creditor as follows; that is, Debtor on the Left-hand to all Proviſions receiv'd, with Cask, Iron Hoops and Bags; and on the Right-hand Creditor, by what your Petty-warrant amounts to, and by Cask, Iron Hoops and Bisket-bags, return'd.

AN
Exact Table
OF
PROPORTIONS
FOR THE
Thickneſs of Maſts,
According
To their Lengths.

Being very uſeful for Young Carpenters, who goe to Sea in Ships: Showing ing how to make any Maſt in the Ship, whether great or ſmall, according to the trueſt Dimenſions, from 10 Foot long to 100 Foot long, and may ſerve for any Maſt now in uſe: Giving a true Proportion of thickneſs in Inches for every 3 Foot in length.

Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.	Length in e:.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.
10	03 $\frac{1}{3}$	28	09 $\frac{1}{3}$	46	15 $\frac{1}{3}$	64	21 $\frac{1}{3}$
11	03 $\frac{2}{3}$	29	09 $\frac{2}{3}$	47	15 $\frac{2}{3}$	65	21 $\frac{2}{3}$
12	04	30	10	48	16	66	22
13	04 $\frac{1}{3}$	31	10 $\frac{1}{3}$	49	16 $\frac{1}{3}$	67	22 $\frac{1}{3}$
14	04 $\frac{2}{3}$	32	10 $\frac{2}{3}$	50	16 $\frac{2}{3}$	68	22 $\frac{2}{3}$
15	05	33	11	51	17	69	23
16	05 $\frac{1}{3}$	34	11 $\frac{1}{3}$	52	17 $\frac{1}{3}$	70	23 $\frac{1}{3}$
17	05 $\frac{2}{3}$	35	11 $\frac{2}{3}$	53	17 $\frac{2}{3}$	71	23 $\frac{2}{3}$
18	06	36	12	54	18	72	24
19	06 $\frac{1}{3}$	37	12 $\frac{1}{3}$	55	18 $\frac{1}{3}$	73	24 $\frac{1}{3}$
20	06 $\frac{2}{3}$	38	12 $\frac{2}{3}$	56	18 $\frac{2}{3}$	74	24 $\frac{2}{3}$
21	07	39	13	57	19	75	25
22	07 $\frac{1}{3}$	40	13 $\frac{1}{3}$	58	19 $\frac{1}{3}$	76	25 $\frac{1}{3}$
23	07 $\frac{2}{3}$	41	13 $\frac{2}{3}$	59	19 $\frac{2}{3}$	77	25 $\frac{2}{3}$
24	08	42	14	60	0	78	26
25	08 $\frac{1}{3}$	43	14 $\frac{1}{3}$	61	20 $\frac{1}{3}$	79	26 $\frac{1}{3}$
26	08 $\frac{2}{3}$	44	14 $\frac{2}{3}$	62	20 $\frac{2}{3}$	80	26 $\frac{2}{3}$
27	09	45	15	63	21	81	27

Length

Length in Feet.	Thickneſs in Inches.	
82	27	$\frac{1}{3}$
83	27	$\frac{2}{3}$
84	28	
85	28	$\frac{1}{3}$
86	28	$\frac{2}{3}$
87	29	
88	29	$\frac{1}{3}$
89	29	$\frac{2}{3}$
90	30	
91	30	$\frac{1}{3}$
92	30	$\frac{2}{3}$
93	31	
94	31	
95	31	
96	32	
97	32	$\frac{1}{3}$
98	32	$\frac{2}{3}$
99	33	

The Uſe of the Table is thus.

SUppoſe you have a Maſt 46 Foot in length, and you would know how many Inches of Diameter this Maſt ſhould be in the Partners, according to Proportion.

Enter the Table in the Column of the Length of Feet at the Head, and look for 46, and right againſt it in the Column of Inches, you will find 15 Inches and $\frac{1}{3}$ part of an Inch, which is the Thickneſs of the Maſt, whoſe Length is 46 Foot; the like you may do by any Number of Feet contained in the Table, without any farther trouble.

A

A Table, ſhewing how many Inches any Maſt from 10 *to* 100 *Foot long ought to be in the middle.*

Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.
10	03	28	08	46	13 1/3	64	18 2/3	82	23 2/3
11	03 1/3	29	08 1/3	47	13 2/3	65	19	83	24
12	03 4/8	30	08 2/3	48	14	66	19 [illegible]/8	84	24 1/3
13	03 2/3	31	09	49	14 1/3	67	19 1/3	85	24 2/3
14	04	32	09 1/3	50	14 6/8	68	19 2/3	86	25
15	04 1/3	33	09 2/3	51	14 2/3	69	20	87	25 1/3
16	04 2/3	34	10	52	15	70	20 1/3	88	25 3/3
17	05	35	10 2/8	53	15 1/3	71	20 2/3	89	26
18	05 6/8	36	10 1/3	54	15 2/3	74	21	90	26 1/3
19	05 1/3	37	10 2/3	55	16	75	21 1/3	91	26 1/2
20	05 2/3	38	11	56	16 1/3	76	21 2/3	92	26 2/3
21	06	39	11 1/3	57	16 4/8	77	22	93	27
22	06 1/3	40	11 2/3	58	16 2/3	78	22 2/8	94	27 1/3
23	06 2/3	41	12	59	17	79	22 1/3	95	27 2/3
24	07	42	12 3/8	60	17 1/3	80	22 2/3	96	28
25	07 7/8	43	12 1/3	61	17 2/3	81	23	97	28 1/3
26	07 1/3	44	12 2/3	62	18	82	23 1/3	98	28 2/3
27	07 2/3	45	13	63	18 2/3	13	23 4/8	99	29

The Uſe of ths Table is the ſame as the former is, only the difference of the Diameters of the thickneſs of the Maſt in the Partners, and the middle, which is $\frac{1}{3}$ part of an Inch in every 3 Foot of the length of the Maſt.

A Table, ſhewing how many Inches any of theſe Maſts of the former Dimenſions ought to be in the Heads.

Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches.	Length in Feet.	Thickneſs in Inches;	Length in Feet.	Thickneſs in Inches.
10	02 ⅓	28	07	46	11	64	16	82	20 ½
11	02 ⅔	29	07 ¼	47	11 ¼	65	16 ¼	83	20 ¾
12	03	30	07 ½	48	12	66	16 ½	84	21
13	03 ¼	31	07 ¾	49	12 ¼	67	16 ¾	85	21 ¼
14	03 ⅓	32	08	50	12 ½	68	17	86	21 ½
15	03 ⅔	33	08 ¼	51	12 ¾	69	17 ¼	87	21 ¾
16	04	34	08 ½	52	13	70	17 ½	88	22
17	04 ¼	35	08 ¾	53	13 ¼	71	17 ¾	89	22 ¼
18	04 ½	36	09	54	13 ½	72	18	90	22 ½
19	04 ⅔	37	09 ¼	55	13 ¾	73	18 ¼	91	22 ¾
20	05	38	09 ½	56	14	74	18 ½	92	23
21	05 ¼	39	09 ¾	57	14 ¼	75	18 ¾	93	23 ¼
22	05 ½	40	10	58	14 ½	76	19	94	23 ½
23	05 ¾	41	10 ¼	59	14 ¾	77	19 ¼	95	23 ¾
24	06	42	10 ½	60	15	78	19 ½	96	24
25	06 ¼	43	10 ¾	61	15 ¼	79	19 ¾	97	24 ¼
26	06 ½	44	11	62	15 ½	80	20	98	24 ½
27	06 ¾	45	11 ¼	63	15 ¾	81	20 ¼	99	24 ¾

This Table is of the ſame Uſe as the two former, only it is Calculated for the Diameters of the Heads of the Maſt, and they are leſſer Diameters becauſe all Maſts are bigger below, than they are aloft.

NOW by this Rule any Ingenuous Man, with very little trouble, may find the Thickneſs of any Maſt whatſoever, whether great or ſmall Maſts, belonging to a Ship; but for Ketches, Yachts, Smacks or Hoyes, this will be no true Proportion for their Maſts, becauſe all ſuch Veſſels that go but upon One Maſt, they have all the Sails that belong to them hanging wholly upon that one Maſt; and therefore conſequently that Maſt ought to be ſtronger, and therefore thicker; and it requires to be ſo, by reaſon of the great ſtrain it is ſubject to; but in Ships it is not ſo, for in Ships the Main-maſt ſupports or bears up only that which properly belongs to it ſelf, as the Top-maſt, Top-gallant-maſt, and the Rigging, Sails, or the like: The Fore-maſt performeth the ſame Office for it ſelf, and the Mizon-maſt doth the like for it ſelf, and the Bowſprit, upon which all the other Maſts have a Dependance for their ſupport, as every expert Seaman knows, therefore we'll ſay no more as to this Point.

But only to ſatisfie you how the Tables are made and Calculated for Ships, and by them you may find the Thickneſs of any, or all, of the Maſts belonging to any Ship, if you do but mind their Lengths, and work according, as is ſhewed in the former directions that you will find in this Book, which will direct and guide you in your Work with abundance of eaſe.

The Rates or Fares of Watermen, *as they were ſet forth by the* Lord Mayor *and Court of* Aldermen.

	Oars.		Skuller.	
	s.	d.	s.	d.
From *London* to *Limehouſe*, *New Crane*, *Shadwell-Dock*, *Bell-wharf*, *Ratcliff-Croſs* ——·——	01	00	00	06

To

	Oars.		Skuller.	
	s.	d.	s.	d.
To *Wapping-Dock*, *Wapping-New*, and *Wapping-Old*, *Stairs*, the *Hermitage*. *Rotherith Church Stairs*, and *Rotherith Stairs*. ——	00	06	00	03
From St. *Olives* to *Rotherith Church Stairs*, and *Rotherith Stairs*. ——	00	06	00	03
From *Billingſgate*, and St. *Olaves*, to St. *Saviour's Mill* ——	00	06	00	03
All the *Stairs* betwen *London-Bridge* and *Weſtminiſter* ——	00	06	00	03
From either ſide above *London-Bridge*, to *Lambeth* and *Fox-Hall* ——	01	00	00	06
From *White-Hall*, to *Lambeth* and *Fax-Hall*	00	06	06	03
From *Temple*, *Dorſet*, *Black-Friars*, *Stairs*, and *Paul's Wharf* to *Lambeth* --	00	08	00	04
Over the water directly in the next Skuller, between *London-bridge* and *Limehouſe*, or *London-bridg.* and *Fox-Hall* ——	00	00	00	02

OARS.

From *London* to

	Whole Fare.		Company.	
	s.	*d.*	*s.*	*d.*
Graveſend	04	06	00	09
Graiſe or *Greenhive*	04	00	00	08
Purflet or *Eriff*	03	00	00	06
Woolwich	02	06	00	04
Blackwall	02	00	00	04
Greenwich or *Deptford*	01	06	00	03
Chelſey, *Batterſea*, *Wanſworth*	01	06	00	03
Putney, *Fulam*, *Barn-Elms*	02	00	00	04
Hammerſmith, *Chiſwick*, or *Mortlock*	02	06	00	06
Brentford, *Iſleworth*, or *Richmond*	03	06	00	06
Twickenham	04	00	00	06
Kingſtone	05	00	00	09
Hampton-Court	06	00	01	00
Hampton-Town, *Sunbury*, or *Walton*	07	00	01	00
Weybridge and *Chertſey*	10	00	01	00
Stanes	12	00	01	00
Windſor	14	00	02	00

Rates for Carrying of Goods in the Tilt-Boat, between Graveſend *and* London.

	s.	d.
A half Firkin	00	01
A whole Firkin	00	02
A Hogſhead	02	00
A Hundred weight of Iron, Cheeſe, or any other heavy Goods	00	04
A Sack of Salt or Corn	00	06
An ordinary Cheſt, or Trunk	00	06
An ordinary Hamper	00	06
The Hire of the whole Tilt-Boat	22	06
Every Single Perſon in the Ordinary Paſſage.	00	06

What Watermen take and demand more than theſe Rates lyes liable to pay Forty Shillings, and ſuffer half a Year's Impriſonment. And if he refuſe to carry any Paſſenger or Goods at theſe Rates, upon Complaint thereof made to the Lord Mayor and Court of Aldermen, he ſhall be ſuſpended from his Employ for Twelve Months.

The

The Four Principal Officers of the Royal Navy.

Treaſurer, Sir *Thomas Littleton.*
Comptroller, Sir *Richard Haddock*, Kt.
Surveyor, *Dan. Furzer*, Eſq;
Clerks of the Acts, *Charles Sergiſon*, *SaSamuel Atkins*, Eſq;

Commiſſioners of the Navy.

Comptroller of the Purſer's Accompts Sir *Cloudſley Shovel*, Kt.
Comptroller of the Treaſurer's Accompts, *Dennis Lyddel*, Eſq;
Comptroller of the Storekeeper's Accompts for the ſeveral Yards, *Henry Greenhill*, Eſq;
Commiſſioner at *Portſmouth*, *William Gifford*, Eſq;
Commiſſioner at *Catham*, Sir *Edward Gregory* Kt.
Commiſſioner at *Plimouth*, *Geo. St. Lo*, Eſq;

Commiſſioners for Victualling the Navy.

Thomas Coleby, Eſq;
Jo. James, Eſq;
William Wright Eſq;

Officers

Officers of Her Majeſties Yard at Chatham.

Clerk of the Cheque, *Jeremy Gregory.*
Store-keeper, *Baldwin Duppa.*
Maſter Attendants, *Sampſon Bourn*, *Barack Pitts.*
Maſter Shipwright, *Robert Shortis.*
His Aſſiſtants, *Iſrael Pownel*, *Jacob Orkworth.*
Clerk of the Survey, *Charles Finch.*

Note, all theſe Officers muſt be Employed in every one of Her Majeſties Yards throughout *England*; as at *Deptford*, *Woolwich*, and at *Sheerneſs*, *Portſmouth* and *Plimouth*, and every where, where there is a Yard belonging to the Queen; as likewiſe a Surgeon, a Sail-maker, and a Porter for opening and ſhutting of the Gates, and ſeveral other Petty Officers there is allow'd in the Yard.

A Compendium of Sea-Gunnery.

PROP. I.

The Names of the Principal Members of a Piece of Ordnance.

THE outſide round about the Piece is call'd the *Superficies of her Metal*, the Subſtance, or whole Maſs of Metal, the *Body*; the Hollowneſs, or Concave Cylinder, the *Bore*; ſo much of her Bore as containeth the Powder and Shot, is the *Chamber, or Charged Cylinder*; the Remainder, her *Vacant Cylinder*; the Spindals or Ears, are call'd the *Trunnions*; the Pummel at her Coyle, the *Caſacabel Deck*; the little Hole, her *Touch-hole*; all the Metal behind the Touch-hole, her *Breech or Coyle*; the greateſt Ring at her Touch-hole, her *Baſe-Ring*; the next Ring above the Touch-hole, her *Reinforc'd Ring*; the next to that, her *Trunnion-Ring*; the Ring next the Mouth, her *Muzzle-Ring*; the Ring between the Trunnion-

Ring and Muzzle-Ring, her *Corniſh-Ring*; all the Rings and Circles about the Muzzle, the *Frieze*, the whole length, the *Chace*.

PROP. 2.

What Inſtruments a Gunner *ought to be furniſhed withal.*

Callaper Compaſſes, large and ſmall, for taking Diameters; Braſs Heights for Shot, Inch Sight-rule, Gunner's Scale, Gunner's Quadrant, with a Geometrical Square, to take Mountures, Levels, &c. Braſs Compaſſes with Steel Points, and a Book wherein to keep his Accounts.

PROP. 3.

How to Diſpart a Piece of Ordnance.

To Diſpart a Piece, is to ſet ſuch a Mark upon the Muzzle Ring, or thereabouts, that a Sightline taken upon the top of the Baſe-Ring againſt the Touch-hole, by the Mark, at, or near, the Muzzle, may be parallel to the Axis of the Concave Cylinder; which to do, take the Diameter of the Baſe-Ring, and likewiſe of the Place at the Muzzle, where you intend the *Diſpart* to ſtand; that done, divide the difference of theſe two Diameters into two equal Parts, and one of them will be the true *Diſpart*; which ſet upon the Gun with Pitch or Wax, or which is better, to have an Iron with a Spring and a Tranſome; the Tranſome is to be made to go up and down, according to the Diameter and Thickneſs of any Piece; the Tranſome ſhould be made long enough to reach from the Touch-hole to the Baſe-Ring.

PROP. 4.

How to Tertiate a Piece of Ordnance.

To Tertiate a Piece, is to know the Thickneſs of the Metal at the Touch-hole, Trunnion, and Neck, by which you judge at the Strength of the Gun; that is, whether it be well Fortified or no; this you muſt do with a Caliber Pair of Compaſſes; and if the Piece be home-bored, the Diameter leſs by the height, divided by 2, is the thickneſs at any place. There are three Degrees uſed in Fortifying each ſort of Ordnance, both Cannons and Culverins. *Firſt*, That ſuch as are ordinarily Fortified, are call'd *Legitimate Pieces: Secondly*, Such whoſe Fortification is leſſen'd, are call'd *Baſterd Pieces*: *Thirdly*, Double Fortify'd Pieces, are call'd *Extraordinary Pieces*.

The Cannons double Fortify'd have fully one Diameter of their Bore in Thickneſs of Metal at their Toucholes, and $\frac{16}{21}$ at their Trunnions, and $\frac{7}{18}$ at their Muzzle.

The leſſen'd Cannons have at their Touch hole but $\frac{3}{4}$ of the Diameter of their Bore in Thickneſs of Metal, and $\frac{9}{16}$ at their Trunnions, and $\frac{5}{10}$ at their Muzzle. The ordinary Fortify'd Cannons have $\frac{7}{8}$ at the Touchole, $\frac{5}{8}$ at the Trunnions, and $\frac{3}{8}$ at the Muzzel. All the double Fortify'd Culverins, and all leſſer Pieces of that kind, have one Diameter and $\frac{7}{8}$ at the Touch-hole, $\frac{15}{16}$ at the Trunnions, and $\frac{9}{16}$ at the Muzzle; and the ordinary Fortify'd Culverins are Fortify'd every way, like the double Fortify'd Cannons. And the leſſened Culverins, like the ordinary Fortify'd Cannons in all Parts.

PROP. 5.

How to diſcover whether there be any Flaws, Crack or Honey-Combs, in a Piece of Ordnance.

Firſt, Cleanſe the Piece very well, then put in an uſual Searcher, made with ſeveral Springs, with Points like great Pins Heads, bending outwards; which being bended together with your Hand until it will enter into the Mouth of the Piece, and put up to the bottom of the Bore, and turn'd round in the Motion of pulling it in and out of the Chaſe; and if there be any Honey-combs or Flaws, the Points will ſtick therein.

Another way to diſcover Cracks.

Strike a ſmart Stroke with a Hammer on the outſide of the Piece; if the Sound be hoarſe, there is ſome Crack; but if the Sound be clear, the Piece is Sound.

PROP. 6.

To know what Bullet is fit to be uſed for any Gun.

Divide the Diameter (or Height) of the Bore of the Gun into 20 equal Parts, and the Diameter (or Height) of the Bullet, fit to be uſed for that Gun, muſt be *19* of thoſe Parts.

PROP. 7.

To find how much Powder is ſufficient both for Proof and Action of any Piece of Ordnance.

The RULE.

Multiply the weight of the Ball (fit for the Piece) by the Number of Calibers in the Circumferance of the Breech, and for Proof, multiply that Product by 8, and for Service, by *6*; that done, divide each particular Product by *96*, and the Quotient gives you the number of Pounds of (ordinary corn'd) Powder.

Example.

Suppoſe an Iron Ball, weighing 24 *l.*

be fit for a Gun whoſe Breech contains 9 Calibers or Diameters of the Bore in Circumference, I demand the quantity of Powder fit for Proof and Action.

Ball 24 *l.*	24 *l.*
Calib. 9	9
216	216
8	6
56) 1728 (18 *l.* Pro.	9) 1296 (13. 5 *l.* Act.
768	336
0	48,0
	0

PROP. 8.

To make Ladles to load your Guns with.

The Ladles ought to be ſo proportion'd for every Gun, that two Ladle-fulls of Powder may Charge the Piece, which in General Terms is thus.

The breadth of all Ladles are to be two Diameters of the Shot, that ſo a third part of the Compaſſes may be left open for the Powder to fall freely out of the Ladle, when you turn it Bottom upwards; the length of the Ladles muſt be ſomewhat different, according as the Piece is Fortify'd.

For double Fortify'd Cannons, the length of the Ladle may be two Diameters, and one half of the Shot, beſides ſo much as is neceſſary to faſten it to the Head of the Ladle-ſtaff, which will require one Diameter more of Plate, but this is not reckoned to the length of the Ladle, becauſe it holds no Powder.

For ordinary Cannons the Ladle muſt not exceed two Diameters of their Shot in length.

For Culverins and Demi-culverins the Ladle may be three Diameters of their Shot, and three and an half for leſſer Guns, to load them at twice: If you would load them at once, you muſt double the length of the Ladle.

This may be obſerv'd for a general Rule, that a Ladle, *9* Balls in length, and 2 Balls in breadth, will hold the juſt weight of the Iron-ſhot in Powder.

But Note, That Iron Ordnance muſt have but three quarters of the Charge of Braſs Ordnance.

PROP. 9.

How, by knowing the weight of one Bullet, to know what any other Bullet will weigh.

It is a common Opinion, and very near to the Truth, that a Bullet of Caſt Iron of four Inches Diameter weighs 9 Pounds of *Averdupoiz* Weight.

Now, if an Iron Bullet of 4 Inches Diameter weighs 9 Pound, what ſhall another Iron Bullet of 8 Inches Diameter? You are to note, That all Bullets have a Cubical Proportion one to another; therefore as 64 (the Cube of 4) is to 9 *l.* ſo it is 512 (the Cube of 8) to 72 *l.*

According to this Proportion the following *Table* is Calculated.

A Table of the Diameter of Iron Spheres.

Weight	Diameter		W.	Diam.		W.	Diam.	
Pounds.	Inc.	Cent.	Po.	I.	C.	Po.	I.	C.
0. 5	1	53	19	5	13	42	5	68
0. 75	1	75	20	5	22	43	6	74
1	1	92	21	5	31	44	6	79
1. 5	2	20	22	5	39	45	6	84
2	2	42	23	5	47	46	6	89
2. 5	2	61	24	5	55	47	6	94
3	2	77	25	5	62	48	6	99
3. 5	2	92	26	5	70	49	6	04
4	3	05	27	5	77	50	7	08
5	3	29	28	5	84	51	7	13
6	3	49	29	5	91	52	7	18
7	3	68	30	5	98	53	7	22
8	3	85	31	6	04	54	7	27
9	4	00	32	6	11	55	7	31
10	4	14	33	6	17	56	7	39
11	4	28	34	6	23	57	7	40
12	4	40	35	6	29	58	7	44
13	4	52	36	6	35	59	7	49
14	4	63	37	6	41	60	7	53
15	4	74	38	6	47	61	7	57
16	4	85	39	6	52	62	7	61
17	4	94	40	6	58	63	7	65
18	5	04	41	6	63	64	7	69

65

W. Po.	Diam. I.	C.	W. Po.	Diam. I.	C.	W. Po.	Diam. I.	C.
65	7	73	77	8	18	89	8	59
66	7	77	78	8	22	90	8	62
67	7	81	79	8	25	91	8	65
68	7	85	80	8	29	92	8	68
69	7	89	81	8	32	93	8	71
70	7	93	82	8	35	94	8	74
71	7	96	83	8	39	95	8	77
72	8	00	84	8	42	96	8	81
73	8	04	85	8	46	97	8	84
74	8	07	86	8	49	98	8	87
75	8	11	87	8	52	99	8	90
76	8	15	88	8	55	100	8	93

The Uſe of the foregoing Table.

Firſt, Suppoſe you would know how many Pounds a Bullet will weigh, whoſe Diameter is 7 Inches, and 77 Centeſms, look in the *Table* for 777, and you will over-againſt it on the Left-hand find *66* Pounds, which is the Weight of the ſaid Bullet.

Secondly, Suppoſe you would know the Diameter of a Bullet, whoſe weight is 26 Pounds, look in the Table for 96 Pounds, and over againſt 96 on the Right hand you will find 8 Inches, and 81 Centeſms, which is the Diameter ſought.

After this manner the Diameter may be readily found by the weight of any Spherical Solid Iron Shot, from half a Pound to 100 Pounds, and contrarily the weight by the Diameters.

PROP. 10.

To make Cartridges, Moulds and Formers, for any ſort of Ordnance.

Cartridges are made either of Canvas or Paper Royal, either of which being prepared, take the height of the Bore of the Piece, and allow $\frac{1}{2}$ part of the Diameter for the vent, and let the piece of Cloth or Paper be 3 times the Diameter of the Bore or Chamber of the Piece for the breadth, and for the length according as your Piece is, (that is to ſay) for the Cannon, the length of the Cartridge muſt be 3 Diameters; for Culverins, Sakers, Falcons, *&c.* 4 Diameters, leaving at the top or bottom one Diameter more for the bottom of the Cartridge, cutting each ſide ſomewhat larger for the ſewing and glewing them together; having always a due reſpect for the Augmenting or Diminiſhing of your Powder, according to the Goodneſs or Badneſs thereof, and to the extraordinary overheating of your Piece.

You muſt have a Former turn'd to the height of the Cartridge, and a convenient length longer than the Cartridge; before you paſte or glew your Paper on the Former, you muſt tallow it, ſo will the Canvas or Paper ſlip off without tearing; if you make Cartridges for Taper-bor'd Guns, your Former muſt be taper accordingly; if you make your Cartridges of Canvas, you muſt allow one Inch for the Seams, if of Paper, three quarters of an Inch, (more than your three Diameters) for the Paſting; when your Cartridges are upon the Former, you muſt have a bottom ready fitted, which is to be paſted cloſe and hard round about; then let them dry, and when they are very dry, mark them how high they ought to be fill'd; the Powder allow'd to each Gunner is as followeth, *viz.* For Cannon of 7, or Baſtard Cannon, 18 *l.* of Powder; for Demi-Cannon 15 *l.* for 24 Pounders 11 *l.* for wohle Culverin 10 *l.* for 12 Pounders 8 *l.* for Demi-Culverins 7 *l.* and ſo of the reſt.

A *Table of* Gunnery; *ſhewing the weight of Fortify'd Guns, the height of the Bore, the height of the Shot, the weight of the Shot, Powder for Proof, Powder for Service, Paces* (5 *Foot to a Pace*) *The Piece ſhoots Point-blank, and the utmoſt Randon the Piece mounted to* 45 *Degres.*

Names	Guns Weight.	Height of Bore.	Height of Shot.	Weight of Shot.	Powder for Proof.	Powder for Service.	Paces Point-blank.	Utmoſt Random.
	C.			li.	li.	li.		
Can. 8.	70	8	7.75	63	28	23	180	00
Can. 7	60	7	6.75	42	24	18	180	1800
Dem.C.	50	6. 3	6.05	32	20	15	180	1800
24 *l.*	40	5. 87	5. 62	24	17	11	180	1810
Culv.	40	5. 32	5. 07	18	14	10	184	1840
12 *l*	35	4 46	4. 64	12	10. 5	8	178	1780
Dem.C.	30	4. 5	4. 03	2	9	7	175	1750
Saker.	20	3. 58	3. 40	5. 25	5. 25	4	160	1600
Minion	12	3. 35	3. 35	4	4	3	120	1200
Falcon	5	2, 68	2, 68	2. 5	2. 5	1.5	120	1200

PROP. 11.

How to know what Proportion one Metal hath to another.

The common receiv'd Proportions for Metals are theſe:

Lead is to Iron, as 2 to 3.
Lead is to Braſs, as 24 to 19.
Lead is to Stone, as 4 to 1.
Iron is to Braſs, as 16 to 18.
Iron is to Stone, as 3 to 8.

The *Reader* taking theſe Proportions into conſideration, may with eaſe Calculate (if Iron Shot be wanting) what height and weight either Shot of Lead, Braſs or Stone, ought to be of, to fit any Piece of Ordnance; the Stone here meant is Marble or Pebble Stone, they being moſt fit for Bullets.

PROP. 12.

How much Rope will make Breechings and Tackles for any Piece.

You may take this for a Rule, That as many Foot as your Piece is in length, ſo many Fathom of Rope muſt there be in one Tackle, and their Breechings to be four times the length of the Piece, with ſome Overplus for faſtning at both ends. If your Piece accidentally break her Tackles and Breechings, the beſt way is to diſmount her.

PROP. 13.

To renew and make good again any ſort of Gunpowder that hath loſt its Strength by Moiſture, long lying, or by any other Means.

Having moiſtened the ſaid Gunpowder with Vinegar, or fair Water, beat it well in a Mortar, then ſift it thro' a fine Sieve or Searſe, and to every Pound of Gunpowder mingle one Ounce of Salt-Petre that hath been mealed, and when you have ſo done, beat and moiſten this Mixture again, until you ſee, by breaking or cutting with a Knife, that there is no ſign of Salt-Petre or Brimſtone in it; when the Petre is thus Incorporated, Corn it, and you have done.

PROP.

PROP. 14.

To preſerve Powder from decaying.

To do this, you are once in a Fortnight or three Weeks to turn your Barrels and Cartridges upſide down, that the *Petre* may be diſperſed to every part; for if it ſtands long, the Petre will deſcend downwards, and by that means the Powder at the bottom will become ſtronger than the Powder at the top, which often ſhaking and turning will remedy.

PROP. 15.

How to make Granadoes to caſt with Mens Hands.

They are made upon a Mould, made with Twine, and cover'd over with Cartridge-Paper, and Muſquet-bullets cut in two, put with Paſte, and bits of Paper, thick on the outſide; after you have doubled the Shells, paſte on ſome at a time, and let it dry, then put on more till it be quite full; then dip it in ſcladſcalding Roſin or Pitch, and hang it up for your Uſe; the innermoſt end of the Twine muſt be left out; and before you pitch it, you muſt draw out the Twine, and ſtop the Hole, and then pitch it; theſe Shells muſt be fill'd with fine Gunpowder, then make a Fuſe of one Pound of Gunpowder, ſix Ounces of Salt-petre, and one of Charcoal; this done, knock the Fuſe up to the Head within one quarter of an Inch.

Then ſtop the reſt of the Holes in the Granado (if there be any) with ſoft Wax, then coat it with Pitch and Hurds, leſt it ſhould break with the fall; and be ſure when you have fir'd the Fuſe, caſt it ſuddenly out of your Hand.

PROP. 16.

To make Powder Cheſts.

They are to be made of three Boards, two of which are to be nail'd together like the Ridge of a Houſe, and the other Board, which muſt be longer and broader, muſt be for the bottom thereof; between theſe three Boards put a Cartridge of Powder, then make it up like a Sea-

Cheſt, and fill it with Stones, Nails, and pieces of old Iron; then nail on the Cover and the Ends to the Deck, in ſuch a place that you may fire the Powder underneath thro' a Hole made to put a Piſtol in.

PROP. 9.

To make Powder Pots.

They are made of *Potter*'s Clay, with Ears to the Matches, lighted at both ends; they are to be fill'd with dry fine Powder, and are to be thrown upon the Enemies Decks, or elſewhere, in time of Action; theſe Pots may likewiſe be fill'd with this Compoſition, *viz.*

Take fine Powder, mixt with ſome Brimſtone, beaten ſmall, put therein ſome *Aſſa Fœtida*, ſome pieces of Verdigreeſe, and ſome Camphire; *Pots* fill'd with this Compoſition, and throw'd into a Ship's Round-houſe, or betwixt the Decks, will be very offenſive to the Enemy.

PROP. 18.

Neceſſary Inſtructions for Sea-Gunners.

When firſt a Gunner cometh into a new Ship, he is to meaſure his Guns, to know whether they, or any of them, be full Fortified, Reinforced, or Leſſened, in Metal; that done, he is to draw and make clean all his Guns within, ſo that there may not any thing remain within that may do harm; then he is to ſearch all his Guns within, to know if they be Taper'd, Chamber'd, or true Bor'd, or whether they be Crack'd, Flaw'd or Honey comb'd, within; then he is to find what Ball ſhe ſhoots, and mark the weight of the Ball over the Port, that thereby he may ſet the ſame Mark upon the Cartridge and Caſe, which will be a means to prevent Miſtakes in time of Service.

The Guns being dimention'd and clean'd as aforeſaid, he is to take half a Ladle of Powder for every Gun, and blow them off, ſponge them well; and finding them clean, load them with their reſpective Cartridges and Powder, which is to be ramm'd home with a ſtrait Wad after it. Then let the Ball roul home to the Wad, and ſet the Wad cloſe home to the Ball, that it roul not out with the toſſing of the Ship; then muſt he Tamken that Piece at the Muzzle with a wooden Tamken, which is to be tallow'd round about to preſerve the Powder from Water; likewiſe make a Tapen of Ockham for the Touch-hole, and and tallow it alſo, to prevent the Water from coming to the Powder that way; then put the Apron over it, and faſten your Piece as you ſee occaſion.

The Piece being loaded and faſt, the Gunner is to have 24 Cartridges at leaſt ready made; that is to ſay, 12 fill'd and 12 empty; and he muſt be very careful, ſo long as the Gunner's Crew are buſie with the Powder, that there be no burning Match of Fire in the Ship; alſo to lay his Cartridges in Barrels or Cheſts in ſort, that when there is occaſion to uſe them, they may be brought without Abuſe: Likewiſe he is to ſort his Ball, and lay every ſort by themſelves in ſeveral Caſes, and upon every Caſe ſet the weight of one of the Shot that is in them.

If it fall out (at any time) that new Ports muſt be cut in the Ship, the Gunner is to take Care that they be above a Beam, or as near as poſſible; alſo that they be not higher or lower than the Port before; likewiſe that there be room for the Guns to play, becauſe if one Gun ſhould be diſmounted, there might another be brought to her place: And obſerve that the Carriage ſtands on her Trucks, the uppermoſt part of the Carriage muſt come to ſtand in the Middle of the Port up and down, that a Man may lay his Piece as he pleaſeth.

He muſt be careful that the Powder in the Powder-room be well cover'd with Hides; alſo that the Axle-tree of the Trucks be well ſoap'd; alſo that his Ropes, Rammers and Sponges, be ready at hand; and he muſt not let the Powder be unturn'd above a Month, and he muſt every Month draw his Guns if he fears there be any wet got to the Powder; and he muſt be careful of the Candle and Fire about the Gun-room and Powder-room, to prevent Danger, Likewiſe he muſt keep a good Accompt of all Materials that belong to the Guns; as Balls, Match and Powder; what part there of he ſpends, and alſo what remains.

The Gunner muſt uſe all Diligence before he Encounter with his Enemy, to ſet a Barrel of Water betwixt every two Guns, that when they ſee Conveniency they may dip the Spunges therein to cool the Pieces.

Alſo the *Gunner* muſt be ſure that there be no melted ſtuff or Fireworks done in the Ship, for it is dangerous: Likewiſe there may no Firework be brought above in the Round-houſe or Cabbin to ſtand, for fear of Shot, but muſt be kept below till time of need, either in the Powder-room, or Steward's-room, to prevent Miſchief.

PROP. 18.

What Neceſſaries a Sea-Gunner *ought to be furniſhed withall for his Ordinance.*

The Neceſſaries that a *Gunner* ought to have for his Ordnance are many, and the Quantity is according to the Quantity and Quality of his Guns; and alſo, if he be in a Man of War, or Merchant-man, then there is difference of Proviſions; I will only name them, and ſo leave it to every *Gunner*'s own Diſcretion to take what Quantity of each he thinks will ſerve his Occaſion, and at the *Voyage* end give an Account what is ſpent, and how it was ſpent) and what there is yet remaining; the Neceſſaries are theſe that follow, *viz.*

Powder; Round Shot of ſeveral ſorts; Double-heads in ſort; Cut Iron of a Foot, or Foot and half lang; Wooden Tamkins in ſort; Cartridge Paper; Thread, Needles, Twine, Starch and Match; Mallets, Handſpikes, Rammer-heads, Worms, Ladles, Sponge-heads, with Staves, Beds and Quoins, in ſort; old Shrouds for Breeching, and twice laid Stuff for Tackles; Laſhers, Double and Single Blocks; new Rope for Double Tackles; ſome old Shrouds for Sponges; ſome Lines, Marline, Tarr'd Twine, Port-ropes, Moulds for Cartridges, Axle-trees and Truck, Budg-barrels, and Lint-ſpindles, Crows, Splice-irons, Primes, Staples and Rings, Tackle hooks, Nails, Thimbles, Port-bands, Sheet-lead, and Lead-ſhot; old Canvas, Scales and Weights, Lanthorns, Dark-lanthorns, Powder-meaſures, Soap, Horns and Priming-irons, Nippers, Pliers, Moulds to caſt Leaden

Bullets, with what other Neceſſaries he thinks needful.

How to Extract the Cube Root.

Firſt, A Cube Number is either Simple or Compound.

Secondly, A Simple Cube Number is that which hath for its Root or Side one of the 9 Digits, and is therefore always leſs than 1090. So 216 is a Simple Cube Number, whoſe Root or Side is 6. All the ſingle Cube Numbers, and Square Numbers, together with their reſpective Roots, are expreſs'd in the following *Table.*

Roots	1	2	3	4	5	6	7	8	9
Squares	1	4	9	16	25	36	49	64	81
Cubes	1	8	27	64	125	612	343	512	729

Thirdly, A Compound Cube Number is that which is produced by the Multiplication of a Number, (conſiſting of two places) at the leaſt three times into it ſelf, and is therefore never leſs than 1000; ſo 2744 is a Compound Cube Number, produced by the Multiplication of 14 into its ſelf 3.

To Prepare a Compound Number for Extraction, put a Point over the firſt place towards the Right-hand, (to wit, the place of Units) then paſſing over the Second and Third places, put another over the Fourth, and ſo proceed (by putting a Point over every Third Figure) till you have finiſhed your Pointing; then you muſt draw a crooked Line on the Right-hand of the ſaid Cube, behind which you are to place your Root; as in the following Example.

Example.

What is the Cube Root of 262144?

Firſt, Point the Number given, and draw a crooked Line, as you have been taught.

Secondly, That done, find out the Cube Root of the firſt Cube (262); but becauſe it is not an exact Cube Number, you are to take the Cube Root of that Number in the foregoing Table, which being leſſer, yet is neareſt to it (which is *6*,) and place it behind the crooked Line, for the firſt Figure in the Root.

Thirdly, This being done, Cube the Figure placed in the Root, and *S*ubſtract the Cube from the firſt Cube of the given Number, (*viz.* 262) and *S*ubſcribe the Remainder.

Fourthly, Bring down the next Cube, (144) and annex it on the Right of the ſaid Remainder, (46) and it makes 46144, which call the Reſolvend.

Fifthly, Draw a Line under the Reſolvend, then Tripple the Root, (that is, multiply it by 3,) which Tripple muſt be placed under the Reſolvend, in ſuch ſort that the place of Units in the ſaid Tripple may ſtand under the place of Tens in the Reſolvend.

Sixthly, Square the Root, (6,) and Tripple the ſaid Square of the Root, and place the ſaid Tripple Square under the ſaid Tripple Root, in ſuch order that the place of Units in the Tripple Square of the Root may ſtand under the place of Tens in the Tripple Root.

Seventhly, Draw a Line underneath the ſaid Tripple Root, and Triple Square of the Root, and add them together in the ſame order as they ſtand, ſo ſhall their Sum be a Diviſor.

Eighthly, Draw a crooked Line on the Left-hand of the Reſolvend, before which the ſaid Diviſor muſt be placed, then let the whole Reſolvend, (the place of Units excepted) be eſteemed a Dividend; then ſeek how often the ſaid Di-

viſor

viſor is contained in the ſaid Dividend, and put the Anſwer for the next Figure in the Root,

Ninthly, Draw a Line under the Work, and then Cube the Figure laſt placed in the Root, and place its Cube underneath the Reſolvend in ſuch ſort that the place of Units in the one may be underneath the Units in the other.

Tenthly, Square the Figure laſt placed in the Root, and Multiply its Square by the Tripple Root ſubſcribed underneath the Reſolvend, (as is directed in the fifth ſtep forgoing) and ſubſcribe the Product under the Cube laſt put down, in ſuch order that the place of Units in the ſaid Product, may ſtand under the place of Tens in the ſaid Cube.

Eleventhly, Multiply the Tripple Square of the Root (ſubſcribed as is directed in the ſixth ſtep aforegoing) by the Figure placed in the Root, and place the Product under the Number laſt ſubſcribed in ſuch manner that the place of Units in this may ſtand under the place of Tens in that.

Twelfthly, Draw another Line under the Work, and add the 3 Numbers together that were laſt placed under the Diviſor

viſor in the ſame order as they ſtand; and call the Sum the *Subtrahend*, which is to be Subſtracted out of the Reſolvend, noting the Remainder, (if there be any.) View the whole Work as followeth.

262144(64	
216	
1098(46144	Reſolvend.
18	Tripple Root.
108	Tripple Square of the Root.
1098	Diviſor.
64	Cube of 4.
288	Square of 4 in the Tr. Root.
432	Tr. Square of the Root in 4.
46144	Subtrahend.
(0)	

Here is three things to be obſerv'd from the Rules before deliver'd concerning the Extraction of the Cube Root.

Obſerv. 1. That the Work contain'd in the 2d, 3d, and 4th, Steps (or Rules) for finding out of the firſt Figure of the Root, is not again to be repeated; but the Work of all the Rules (or Precepts) following is to be repeated as often as a new Figure is put in the Root.

Obſerv. 2. For every particular Cube (or Point) in the Number given (except the firſt) there is to be found out a new Reſolvend, by bringing down and annexing the next Cube to the Remainder; and as often as there is a Reſolvend, ſo often there muſt be found a new Diviſor; and as often as there is found a new Diviſor, ſo often muſt there be found a new Subtrahend.

Obſ. 3. When the Subtrahend chanceth to be greater than the Reſolvend, the Work is erroneous, which muſt be corrected by putting a leſſer Figure in the Quotient.

Hitherto hath been ſpoken concerning the extraction of the Cube Root of Cubick or Rational Numbers.

But if when all the Points or Cubes in the given Number are finiſh'd, there be yet a Remainder after the laſt Subſtraction, ſuch are call'd Surd Numbers, (being incommenſurable to their Cube Roots) whoſe Cube Roots, tho' they be inexplicable by Numbers, yet may be obtain'd infinitely near by an Opproximation, according to the following Directions, *viz.*

When a Surd Number is propoſed for Extraction, proceed therewith as you did in the laſt Example till all the Points are finiſh'd, and then there will (always) be a remainder; and to find the Decimal Fraction to be anexed to the Root found, to bring it nearer to the Truth, proceed thus: Place three Cyphers on the Right-hand of the Remainder for a new Reſolvend, and ſo continue the Extraction (as you have been taught) and there will be produced one Figure more to be placed in the Quotient, which is the firſt Figure (or place of Tens) in the Decimals, and ſo by a continual annexing of three Cyphers to every laſt Remainder, you may continue the Extraction to as many places of Decimals as you pleaſe. For as many Ternaries of Cyphers as are annex'd, ſo many places of Decimals are in the Root, which are to be diſtinguiſhed from the Left by a Comma.

The Extraction of the Cube Root is thus prov'd; *viz.* Cube the Root, and to the laſt Product add the Remainder, (if there be any) and if that Sum be equal to the Number given, (reſpect being had to the Cyphers, if any be added) the Work is truly perform'd, otherwiſe not.

A Table to find the Cube Root of any Number, not exceeding 1000000.

The Root.	The Cube.	The Root	The Cube.	The Root.	The Cube.
1.25	1.95	7.5	421.87	17.5	5359
1.5	3.37	7.75	465.48	18	5832
1.75	5.36	8	512	18.5	6332
2	8	8.25	561.51	19	6859
2.25	11.39	8.5	614.12	19.5	7415
2.5	15.62	8.75	669.92	20	8000
2.75	20.80	9	729	20.5	8612
3	27	9.25	791.45	21	9261
3.25	34.33	9.5	857.37	21.5	9938
3.5	42.82	9.75	926.89	22	10648
3.75	52.73	10	1000	22.5	11390
4	64	10.5	1015.76	23	12167
4.25	76.77	11	1331	23.5	12708
4.5	91.12	11.5	1520.87	24	13824
4.75	107.17	12	1728	24.5	14705
5	125	12.5	1953.12	25	15625
5.25	144.90	13	2197	25.5	16581
5.5	167.37	13.5	2460.59	26	17576
5.75	190.11	14	2744	26.5	18609
6	216	14.5	3075.25	27	19683
6.25	244.14	15	3375	27.5	20797
6.5	274.62	15.5	3724	28	21972
6.75	307.55	16	4096	28.5	23149
7	343	16.5	4492	29	24389
7.25	381.08	17	4913	29.5	25672

The Rt.	*The Cube.*	*The Rt.*	*The Cube.*	*The Rt*	*The Cube.*
30	27000	54	157464	79	493039
30	28372	55	167375	80	512000
31	29791	56	175616	81	531441
32	32768	57	185193	82	550808
33	35937	58	195112	83	571787
34	39304	59	205379	84	592604
35	42825	60	216000	85	614125
36	48656	61	226981	86	636056
37	50653	62	238328	87	648303
38	54874	63	293047	88	681472
39	55419	64	262244	89	705669
40	64000	65	274625	90	729000
41	68921	66	287495	91	753571
42	74088	67	300753	92	778688
43	79507	68	314432	93	804357
44	85184	69	342199	94	830584
45	91125	70	331000	95	817375
46	97330	71	357911	96	884736
47	103823	72	373348	97	925673
48	110592	73	389017	98	941192
49	117049	74	405224	99	970299
50	125000	75	411875	100	1000000
51	135651	76	438976		
52	140608	77	456233		
53	148877	78	474522		

FINIS.

Advertiſement.

THere is lately brought from *Chili* in *America* a moſt excellent natural Balſam, far exceeding that of *Peru* and *Tolu*, in curing moſt Diſeaſes in human Bodies: 'Tis a Remedy no Man under the Sun can compoſe, as being a moſt Odoriferous and Natural Balſam. It cures all Pains proceeding from Cold, corroborates the Stomach, creates an Appetite, and ſtrengthens the whole Body: It is a wonderful Remedy for all internal Sores, Bruiſes, Ulcers, *&c.* and mightily helps all Aſthmatical Diſtempers: 'Tis alſo a great Cephalick, helping moſt Diſeaſes of the Head, and ſtrengthning the Brain and Nerves: It kills the Worms, provokes Urine, and is good againſt the Stone; helps all Fluxes of the Belly; is excellent in all Diſeaſes of the Ears, eſpecially Deafneſs: It alſo cures all manner of green Wounds.

Note, *It is only to be had of* Eben Tracy, *at the three Bibles on* London-bridge, *at* 1 s. 6 d. *the Ounce; the Bottles are Seal'd with the Balſam-tree.*

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